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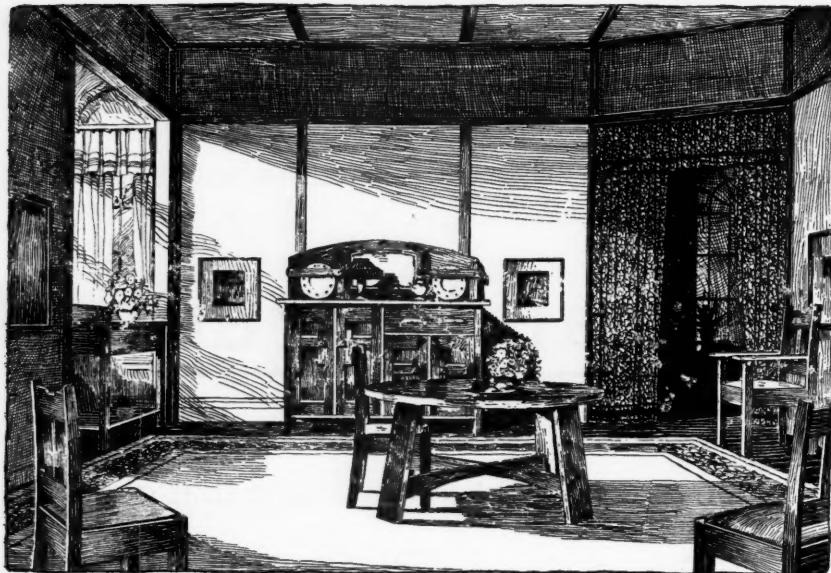
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Table of Contents

	Page.		Page.
ORIGINAL ARTICLES—		BRITISH MEDICAL ASSOCIATION NEWS—	
A Comparative Statistical Inquiry into the Prevalence of Diseases, Death Rates, Infantile Mortality and Birth Rates in Queensland, by A. Breinl	173	Scientific	190
REVIEWS—		THE WAR MEMORIAL FUND IN VICTORIA	192
Sanitary Science	184	POST-GRADUATE COURSE IN MELBOURNE	192
ORIGINAL ARTICLES—		MEDICAL INSPECTION OF SEAMEN	192
The Medical Curriculum	185	CORRESPONDENCE—	
THE WEEK—		Phlebotomus Flies in Papua	193
The "Toxæmias" of Pregnancy	186	Is Ethyl Chloride Safe?	193
UNIVERSITY INTELLIGENCE—		Treatment of Carbuncle	193
The University Curriculum at the Sydney University	187	BOOKS RECEIVED	194
ABSTRACTS FROM CURRENT MEDICAL LITERATURE—		MEDICAL APPOINTMENTS VACANT, ETC.	194
Dermatology	188	MEDICAL APPOINTMENTS—IMPORTANT NOTICE	194
Radiology	188	DIARY FOR THE MONTH	194

A COMPARATIVE STATISTICAL INQUIRY INTO THE PREVALENCE OF DISEASES, DEATH RATES, INFANTILE MORTALITY AND BIRTH RATES IN QUEENSLAND.

By A. Breinl.

From the Australian Institute of Tropical Medicine, Townsville, Queensland.

It is a generally admitted fact that climate and surroundings influence health and disease of a community to a great extent and this influence finds its expression in the vital statistics of this community. It is difficult to estimate disease incidence; the occurrence of notifiable diseases may be gauged by the numbers of notifications, but for all other diseases the number of admissions to the hospitals is the only approximate guide. The virulence of the diseases may be judged by the case mortality in the hospitals, that is, the percentage of deaths from the various diseases compared with the number of admissions. The general death rate, considered in connexion with the average case mortality and hospital admissions indicates the degree to which hospital accommodation is made use of by the population. In addition, infantile mortality rates and birth rates allow of far-reaching conclusions to be drawn as to the general health conditions and prosperity.

Up to the present figures in these respects were only available for the whole of Queensland, and for the individual hospitals, but no systematic inquiry had been undertaken as yet with the purpose of com-

paring health conditions of larger districts of Queensland.

The inquiry was made possible by the valuable assistance rendered by the Queensland Government Statistician, the Government Statistician of Victoria and Tasmania and by the Commonwealth Statistician, who have courteously made available the publication containing the basal data. It is quite clear that any statistical inquiry offers a great many sources of error, the errors varying in direct proportion with the magnitude of the figures. In Queensland the population becomes scantier and more scattered with the progress north and in a sparsely populated area small numbers greatly influence the percentages. Table I. contains the population figures for the districts and Table II. the numbers for the yearly average hospital admissions for ten years (1902 to 1911) for the six districts which were utilized in the inquiry.

TABLE I.—POPULATION OF DISTRICTS OF QUEENSLAND ACCORDING TO CENSUS, 1881, 1891, 1901 AND 1911.

Census District		1911. (Estimated population.)			
		1881.	1891.	1901.	1911.
Coastal I.	. . .	80,932	161,394	189,974	234,038
Coastal II.	. . .	44,260	79,201	105,358	124,636
Coastal III.	. . .	22,726	60,502	83,542	93,993
Inland I.	. . .	40,979	56,017	75,377	110,372
Inland II.	. . .	12,440	18,819	24,038	26,607
Inland III.	. . .	2,288	10,397	12,175	14,733
Total	. . .	213,525	393,718	501,432	614,352
					688,547

TABLE II.—AVERAGE NUMBER OF HOSPITAL ADMISSIONS FOR
1902 TO 1911.

Coastal Districts.	Inland Districts.
I. 6,647	I. 2,775
II. 3,426	II. 1,620
III. 5,169	III. 887

The clinical diagnoses of the hospital cases are not always correct and the stated causes of deaths in the

death certificates, especially in districts where the aid of a medical practitioner is not always obtainable, are sometimes of doubtful value in a statistical inquiry. It is, however, possible to minimize these sources of error by considering the figures for larger districts only and by extending the inquiry over a number of years; but the latter procedure introduces a new source of error, since the census in



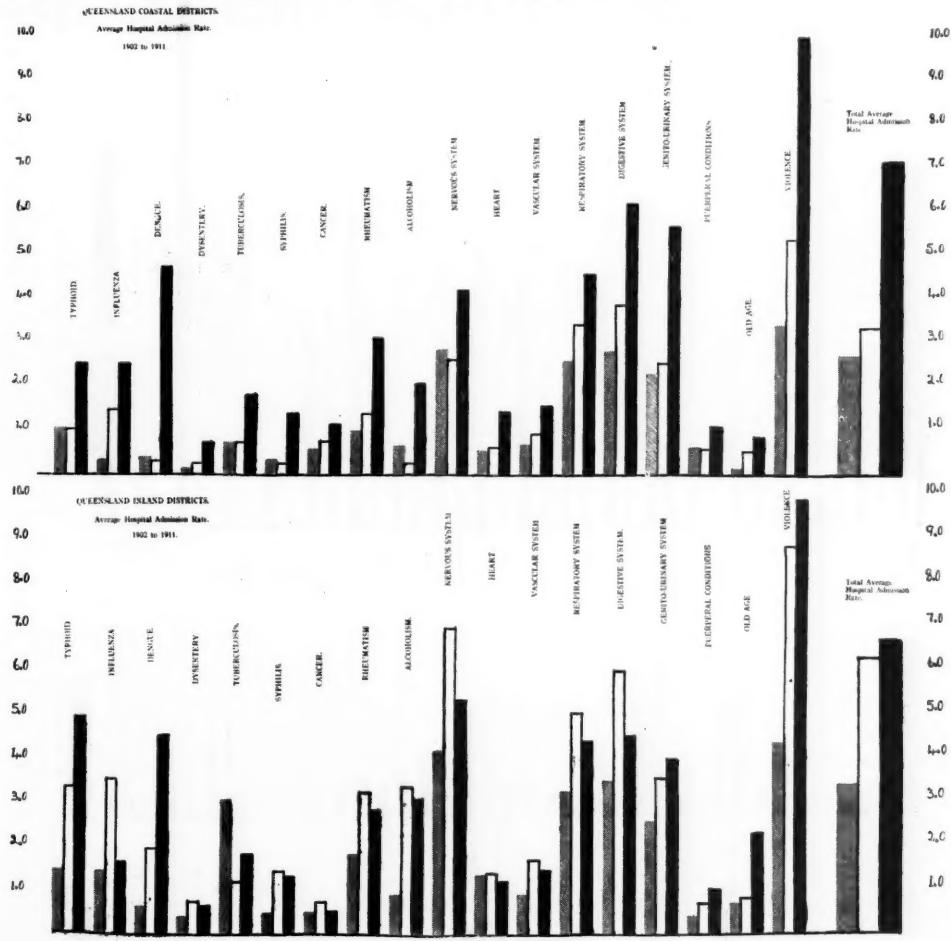
Australia takes place only every ten years. For a few years, following the census year, the estimated numbers of population are fairly correct, but the further the year is removed from the last census, the less reliance can be placed on the estimated population figures. In order to overcome this disadvantage the decade between two census years 1902 to 1911 was selected as the unit of comparison and only for completeness sake the average rates for the years after the census were calculated.

In addition, the well-recognized migratory character of the population of Queensland must exert a great influence upon the vital statistics, but it is impossible with the figures available to estimate its influence.

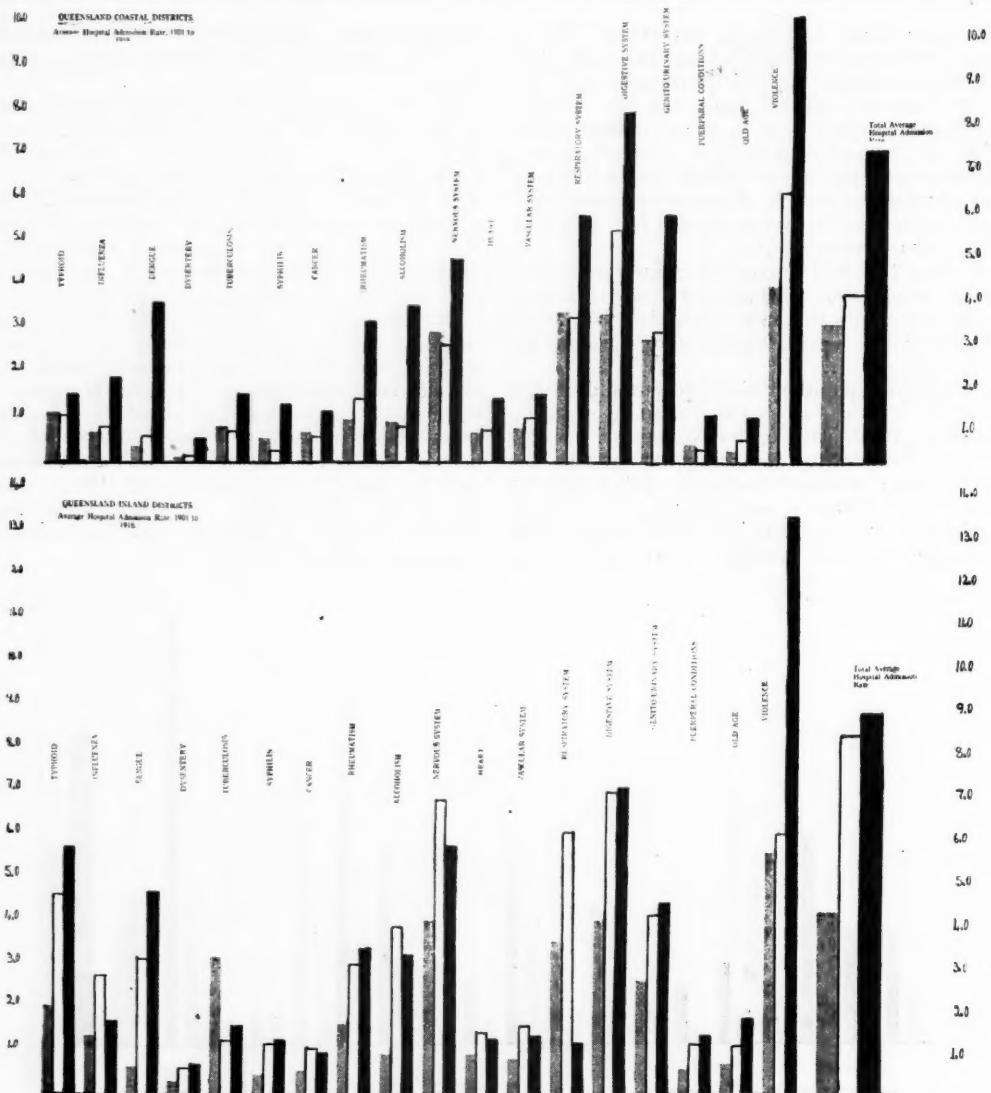
From a climatic point of view Queensland is far from uniform. There are distinct climatic changes, corresponding to the latitude, the averages of the dry and wet bulb temperature becoming higher with decreasing latitude; the coastal climate differs greatly from the inland climate, possessing lower average minima, higher average maxima and considerably lower average wet bulb readings. In addition the

elevation above sea level and the total amount and monthly distribution of rainfall exerts a potent influence.

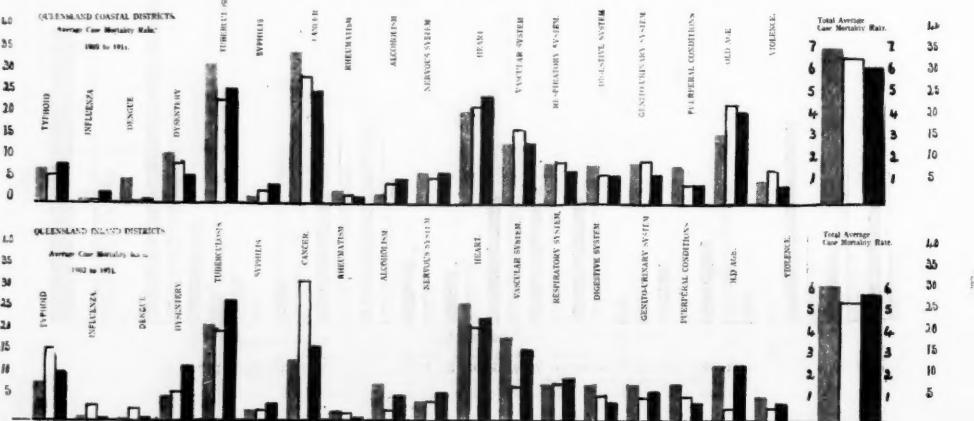
For the purpose of the statistical inquiry the whole of Queensland was divided into six separate districts, three coastal and three inland, the two southern districts situated roughly between 29° and 27° south latitude, the two central districts between 27° and 22° and the two northern districts between 22° and $17\frac{1}{2}^{\circ}$. Each of the districts comprises a number of census districts, for which separate vital statistical figures are available (compare map). The northern district (7th census district), situated between Port Douglas and Cape York, which includes the hospitals situated in Port Douglas, Cooktown and Thursday Island has not been considered in the present inquiry, since the returns of patients admitted to the Thursday Island Hospital include a large number of coloured persons and it was impossible to obtain the necessary data for the white population only; thus a consideration of the total hospital admission in relation to the number of white inhabitants would have given rise to erroneous conclusions.



GRAPH I.
Queensland Coastal and Inland Districts.
Average hospital admission rate, 1902 to 1911. Hospital admissions per 1,000 population. Total average hospital admissions per 100 population. (Typhoid, influenza, dengue, dysentery from 1907 to 1911.)



GRAPH II.
Queensland Coastal and Inland Districts.
Average hospital admission rate, 1901 to 1918. Hospital admissions per 1,000 population. Total average hospital admissions per 100 population. (Typhoid, influenza, dengue, dysentery from 1907 to 1918 only.)



GRAPH III.
Queensland Coastal and Inland Districts.
Average case mortality rates, 1902 to 1911 (Typhoid, influenza, dengue, dysentery from 1907 to 1911.)

Methods.

For the hospital statistics the returns of the various hospitals, published in the vital statistics of the State of Queensland were utilized. The first coastal district comprises the following hospitals:

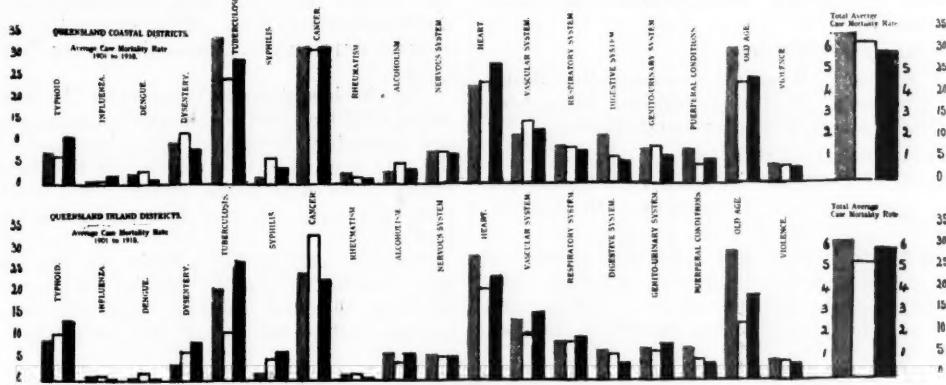
Brisbane General Hospital, Children's, Diamantina, Lady Lamington, Mater Misericordiae, Beau-desert, Boonah, Ipswich, Laidley and Kileoy.

The second coastal district:

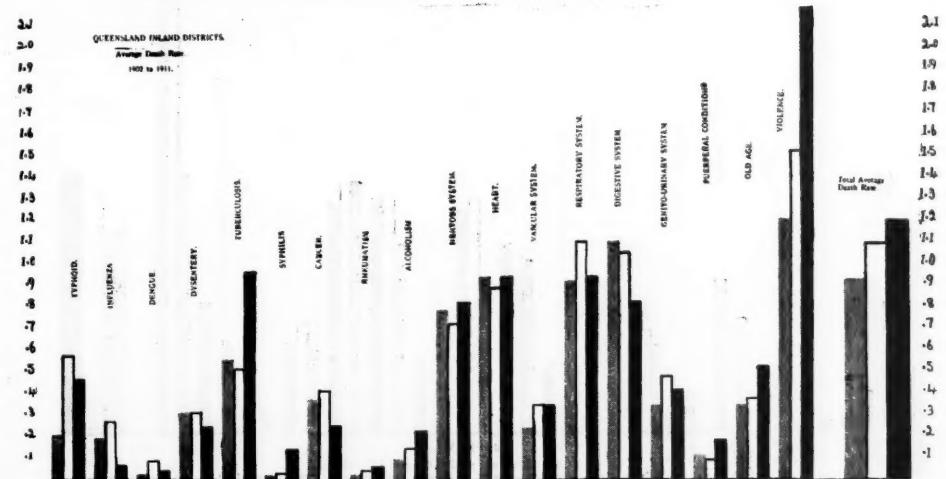
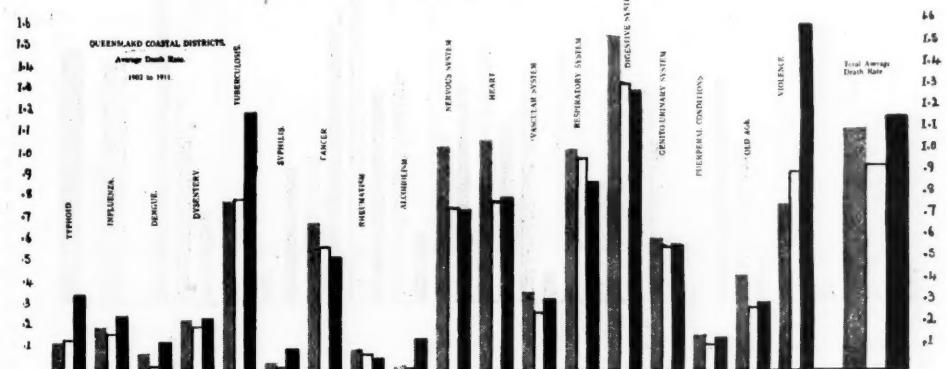
Bundaberg, Eidsvold, Childers, Gayndah, Gin Gin, Gympie, Kingaroy, Maryborough, Mount Perry, Nanango and Wondai, Gladstone, Many Peaks, Mount Morgan, Rockhampton General and Children's Hospital.

The third coastal district:

Bowen, Ayr, Charters Towers, Mackay, Proser-



Queensland Coastal and Inland Districts.
Average case mortality rates, 1901 to 1918. (Typhoid, influenza, dengue, and dysentery from 1907 to 1918.)



Queensland Coastal and Inland Districts.
Average death rates, 1902 to 1911. Death rates per 1,000 population.
Total average death rate per 100 population.

pine, Townsville, Cairns, Chillagoe, Forsayth, Atherton, Innisfail, Ingham, Herberton, Irvinebank, Marreeba, Mount Garnett, Mount Molloy, Mount Carbine, Stannary Hills and Wolfram Camp.

The first inland district:

Avavale, Augathella, Charleville, Cunnamulla, Thargomindah, Mitchell, Mungindi, St. George, Taroom and Roma, Dalby and Dalby Sanatorium, Goondiwindi, Miles, Stanthorpe, Surat, Texas, Toowoomba and Warwick.

The second inland district:

Boulia, Kynuna, Winton, Aramac, Barcaldine, Blackall, Clermont, Emerald, Jundah, Longreach, Isisford, Muttaburra, Springsure and Tambo.

The third inland district:

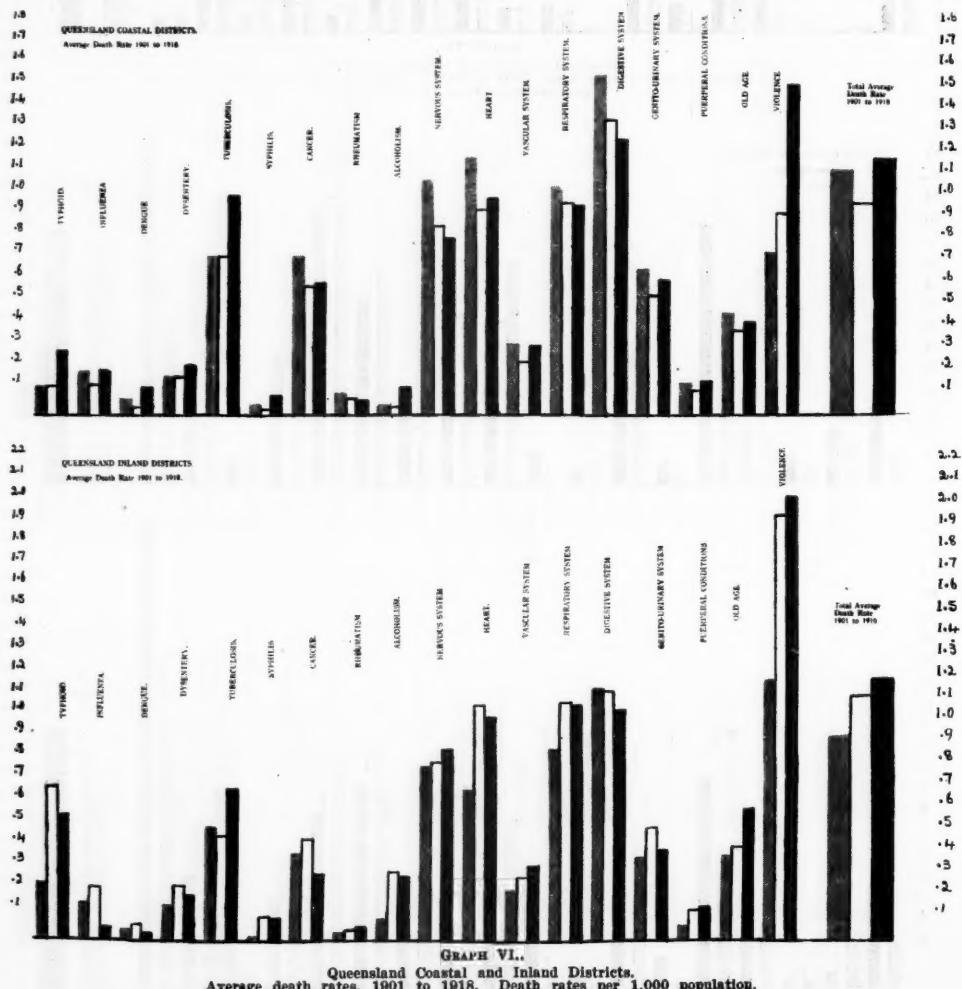
Burketown, Camooweal, Cloncurry, Einasleigh, Croydon, Georgetown, Normanton, Hughenden, Kuridala, Richmond and Selwyn.

Separate figures were taken out for a number of individual diseases, namely, typhoid, influenza, dengue, dysentery, cancer, rheumatism, syphilis and alcoholism and for the following groups of diseases,

viz., the nervous, the respiratory, the digestive and the genito-urinary systems, including the diseases of the adnexa, puerperal conditions, old age, violence and in addition the average total from all causes was appended. The diseases of the circulatory system were divided into two sub-divisions, heart disease, which include pericarditis, endocarditis, organic diseases of the heart and *angina pectoris*, and diseases of the arteries in which were included the diseases of the lymphatic system. Throughout the inquiry the diseases were classified according to the full Bertillon system.

For the hospital admission rates the figures given in the vital statistics for north Queensland were taken out separately, arranged according to districts and the rate worked out in relation to the district population. The population figures from 1901 to 1918 were supplied by the Commonwealth Bureau of Statistics.

Separate graphs were made for the coastal and inland districts. In the graphs, under each disease heading, the first column represents the southern coastal district, the second the central and the third



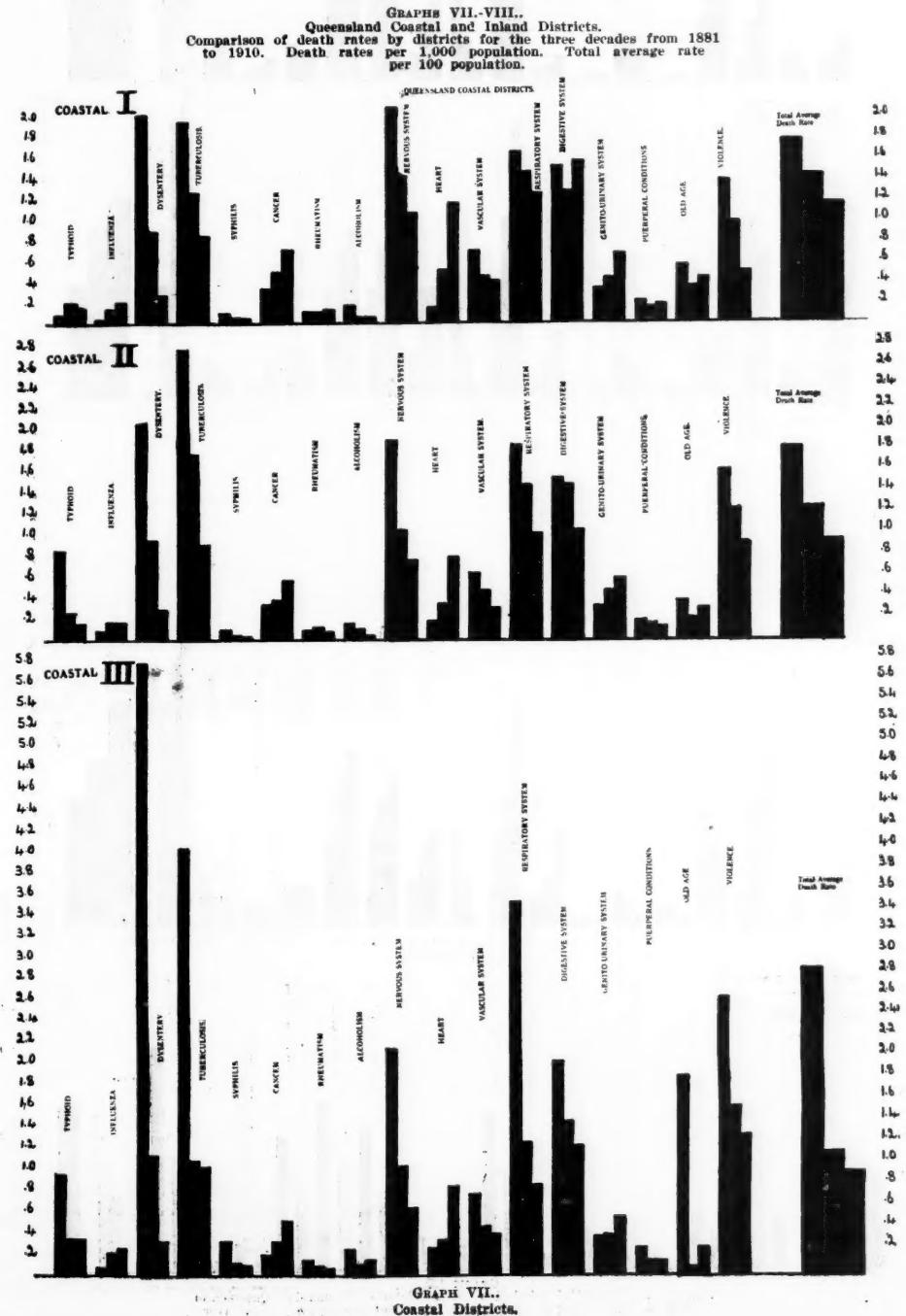
the northern coastal district; the same sequence has been employed for the inland districts. Graphs were made separately for the decade 1902 to 1911 and again for the years 1901 to 1918, representing the total number of years for which detailed hospital statistics are available. The graphs for the diseases represent the admission rate per 1,000 population, whereas the total average admission rate represents the total admission rate per hundred population.

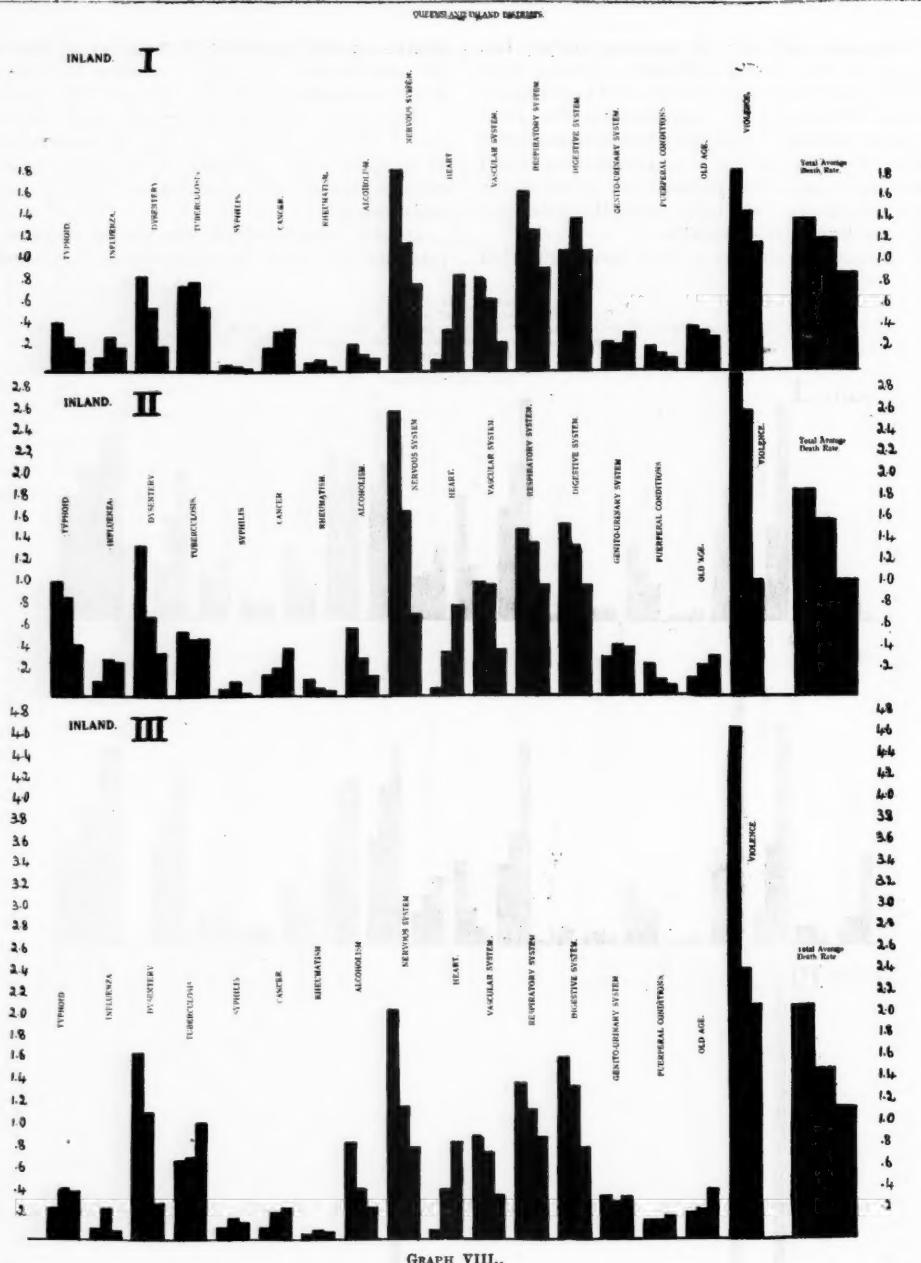
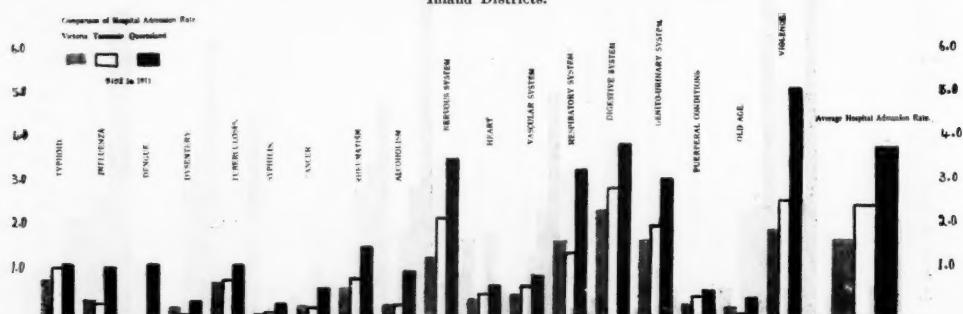
The case mortality rate, i.e., the percentage of

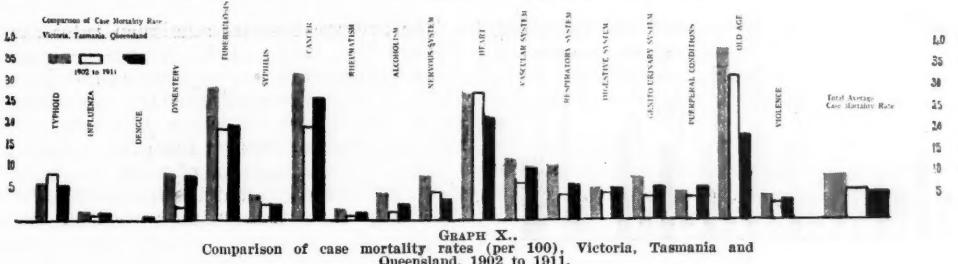
deaths in the hospitals in relation to the number of admissions for the same diseases for the same districts was calculated and graphically represented.

Similarly the district death rate was calculated per 1,000 of population and is presented in form of graphs. The column of the total average death rate represents the number of deaths per hundred inhabitants.

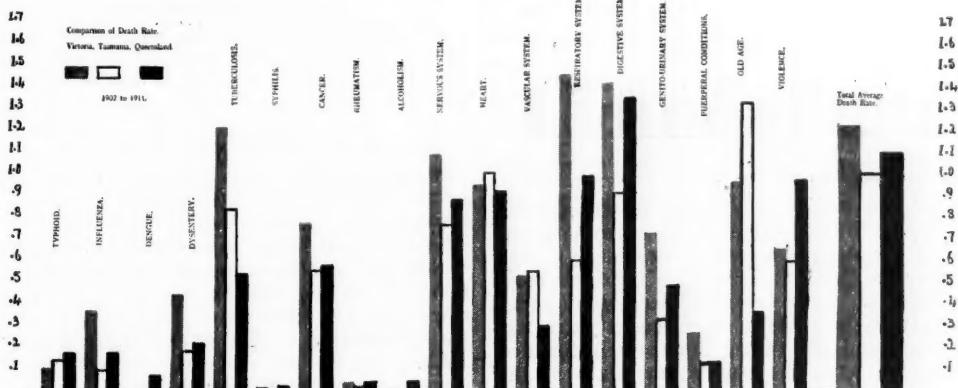
It was considered of interest to compare as far as possible the death rates according to districts during



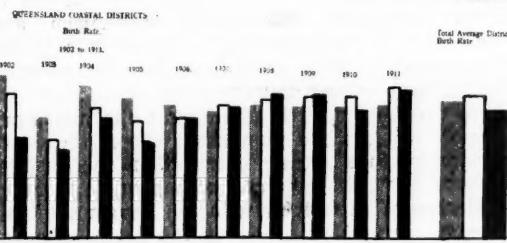
GRAPH VIII.
Inland Districts.



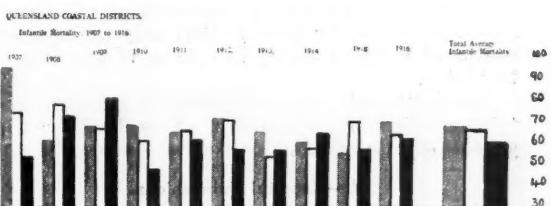
Comparison of case mortality rates (per 100), Victoria, Tasmania and Queensland, 1902 to 1911.



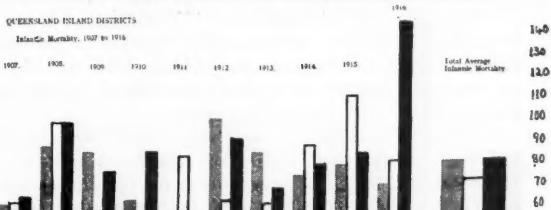
Comparison of death rates Victoria, Tasmania and Queensland, 1902 to 1911. Average death rate per 1,000 inhabitants. Total average death rate per 100 population.



Total Average District Birth Rate

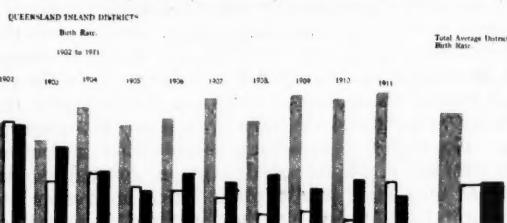


Total Average Infant Mortality

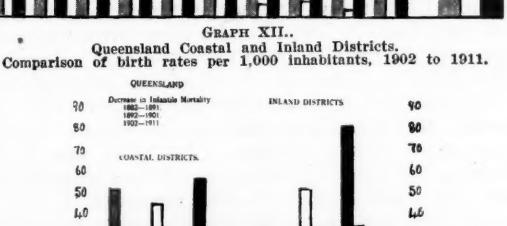


Total Average Infant Mortality

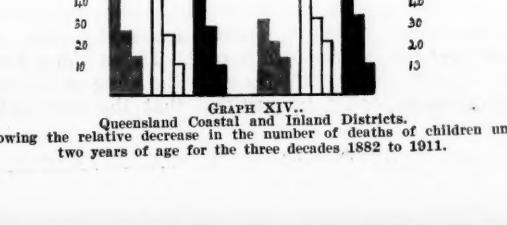
Total Average District Birth Rate



Total Average District Birth Rate



Total Average District Birth Rate



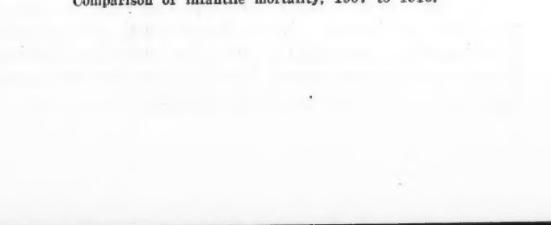
COASTAL DISTRICTS

INLAND DISTRICTS

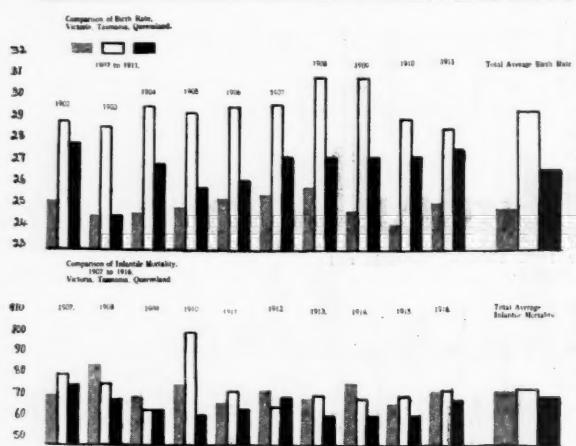
1882-1891

1892-1901

1902-1911

Queensland Coastal and Inland Districts.
Showing the relative decrease in the number of deaths of children under
two years of age for the three decades 1882 to 1911.GRAPH XIII.
Queensland Coastal and Inland Districts.
Comparison of infantile mortality, 1907 to 1916.

Total Average Infant Mortality



GRAPH XV.
Comparison of birth rate Victoria, Tasmania and Queensland from 1902 to 1911 and infantile mortality 1907 to 1916 for the same States.

the times of the earlier settlement of Queensland. For this purpose the number of deaths was taken out according to the same diseases as previously. The census figures for 1881 to 1891 were obtained from the census reports. The increase and decrease in population respectively between the two census years was divided by ten and the factor thus obtained added to or subtracted from the population figure of the preceding year for each year. Thus population figures for the intervening periods were obtained representing a fair average. The average death rates for the three decades 1881 to 1890, 1891 to 1900 and 1901 to 1910 were utilized for the graph.

Great difficulties were encountered in working out the true infantile mortality in Queensland, that is, the relative number of deaths of children under one year of age per 1,000 births. Separate figures for the number of deaths under one year of age could only be obtained from 1907 onwards; prior to 1907 only the number of deaths of children under two years of age had been tabulated.

The birth rate was calculated in relation to the total number of inhabitants of each district and graphically represented.

I.—Hospital Admissions.

The average hospital admission rates from 1902 to 1911 are plotted in Graph I. The admission rates for typhoid, influenza, dengue and dysentery represent the average for five years only (from 1907 to 1911) as no separate figures have been published in the vital statistics for the preceding years.

The graphs indicate that the hospital admission rates are much higher for the northern coastal districts than either for the central or for the southern districts. They show, however, on the whole, the same relative increase with the exception of admissions for dengue and violence, which are proportionately greater; the central district occupies an intermediate position.

For the three inland districts the relative proportions are different. Both the central and northern district show practically the same relative admission figures, which are much higher than the corresponding figures for the southern district.

The average hospital admission rates for 18 years (Graph II.), 1901 to 1918, for the same diseases and disease groups are very similar to those for the decade 1902 to 1911, the admission rate for violence in the third inland district being, however, much higher and showing an increase from 9.9 to 13.3 per 1,000.

From a casual perusal of these graphs the impression may be gained that the northern parts are more unhealthy than the southern districts, but further consideration will prove clearly that the higher hospital admissions are due to other factors.

II.—Case Mortality.

In order to ascertain the severity of the cases admitted to the different hospitals, the case mortality, that is, the relative number of deaths in the hospitals per 100 admissions for the same disease or disease groups was ascertained for the years 1902 to 1911.

The graph (Graph III.) shows that on the whole the case mortality does not vary to any appreciable extent according to districts. There are a few exceptions, e.g., a relatively greater number of cases of cancer died in the second inland district. On the whole the conclusion seems justified that the cases admitted to the various hospitals are of about the same severity. The graph for 1902 to 1911 is practically identical with that for 1901 to 1918 (Graph IV.).

III.—Death Rates.

The district death rates per 1,000 inhabitants (total average per 100) for the same diseases (Graph V.) do not exhibit any great variations according to districts. Typhoid, tuberculosis, alcoholism and violence show a somewhat higher death rate in the northern coastal district and tuberculosis and violence in the northern inland district.

There can be but little doubt that the migratory nature of the northern population affects the death rate statistics to a greater extent than the hospital admissions; it would, however, be impossible to gauge the influence of this factor with the figures available at present. Graph VI., showing the death rates for 1901 to 1918, is practically identical with Graph V.

Consideration of the comparative figures for the hospital admissions in the different districts shows that hospital admissions for the northern districts are much higher than for the southern districts and the question arises as to the significance of this observation. The higher figures may either be an indication of a greater incidence of disease in general in the north or may find their explanation in a greater use of hospital facilities by the northern population. When regarding the hospital admission figures in connexion with the district death rates and case mortality rates a definite answer can be obtained. The figures for the average case mortality rates prove that on the whole the cases dealt with in the various hospitals are of a similar severity. Assuming now that throughout Queensland the same relative proportion of the sick population were utilizing hospital facilities, the districts with a higher admission rate and a constant case mortality would necessarily show a higher average district death rate. If, on the other hand, the district death rates were the same or lower, the conclusion would be justified that the increased

hospital admission rate is only due to the fact that a greater proportion of the population avail themselves of hospital benefits. As in the northern districts of Queensland, both coastal and inland, the average death rates vary but slightly from those for the other parts of Queensland (by one in thousand for the coastal and three in thousand for the inland district), the conclusion seems to be justified that the increase in the hospital admissions does not indicate a greater incidence of disease in the northern part, but only a greater use of hospital accommodation.

Medical practitioners with experience in different parts of Queensland bear out the truth of this statement; they assert that in many parts of north Queensland practically the whole of the population uses the hospitals.

Death Rates in Decades from 1881 to 1910.

In order to obtain as far as possible a medical history of the different districts of Queensland based on the death statistics, death rates for the same diseases and disease groups as previously, for the same six districts for the three decades from 1881 to 1910 were compiled and the results summarized in form of a graph. The population was estimated in the way indicated above. Separate graphs for each district (three coastal and three inland) were prepared. In each graph the first column under the disease heading represents the average death rate for the years between 1881 and 1890, the second column between 1891 and 1900 and the third from 1901 to 1910. In these graphs the rates for the diseases have been calculated per 1,000 and the total average death rate per 100 inhabitants (compare Table III.).

TABLE III.—TOTAL AVERAGE DEATH RATES FOR THE SIX DISTRICTS FROM 1881 TO 1910.

Years.	Coastal.			Inland.		
	I.	II.	III.	I.	II.	III.
1881 to 1890 ..	17.196	18.178	29.009	14.003	19.993	21.363
1891 to 1900 ..	11.991	12.490	13.652	12.179	16.130	15.660
1901 to 1910 ..	11.344	9.517	11.800	9.227	10.496	12.154

In general the graphs (Graphs VII. and VIII.) show a marked decrease in the total average death rate which decrease is most pronounced in the northern coastal district. It is of interest that in the six districts a similar tendency for certain diseases to increase or decrease can be noted. For example in every district the number of deaths due to diseases of the heart has increased, whilst the number of deaths due to vascular disease has decreased. Throughout Queensland the number of deaths due to cancer has steadily increased from decade to decade. Most striking is the decrease in the number of deaths due to dysentery and tuberculosis.

Comparison of Hospital Admissions, Case Mortalities and Death Rates of Victoria and Tasmania with Those of the Whole of Queensland.

As the previous graphs indicate in how far the vital statistics for the separate districts influence the figures for the whole of Queensland, it was considered of interest to compare the rates obtained for the whole of Queensland with the corresponding figures for Victoria and Tasmania. For this purpose hospital admission rates, case mortality and death rates were calculated for the whole of Victoria and for Tasmania for the same diseases and disease groups as pre-

viously for the years 1902 to 1911 and the results graphically presented.

The first column under each heading represents Victoria, the second Tasmania and the third Queensland.

A comparison of the hospital admissions (Graph IX.) proves that the hospital admissions are in every instance higher for Queensland than for the other two States. A comparison of the case mortality rates (Graph X.) for the three States proves that the case mortality rate is with few exceptions practically the same for the three States. The average death rate (Graph XI.) is highest for Victoria, lowest for Tasmania, whereas Queensland occupies an intermediate position on the whole.

A consideration of these graphs proves again that the relative larger number of hospital admissions does not signify a greater morbidity, but indicates that a larger relative proportion of inhabitants of Queensland make use of hospital facilities compared with Victoria and Tasmania.

Birth Rates.

A comparative statistical inquiry into the birth rates of the same districts, as utilized in the previous inquiry, was carried out. For reasons previously stated, the decade 1902 to 1911 was used as standard of comparison. The results were again tabulated for the three coastal and the three inland districts.

The graphs (Graph XIII.) prove that the birth rate does not show any marked variation in the three coastal districts and that climatic conditions do not seem to influence the number of births.

For the inland districts the averages vary considerably and are highest in the south. This difference, however, cannot be attributed to climatic conditions alone, otherwise analogous changes would be noticed in the coastal districts, but may find its explanation in the fact that a much smaller number of women of child-bearing ages live in the central and northern inland districts. A calculation of the ratio of the male and female population at the time of the 1911 census proves this contention (Table IV.).

TABLE IV.—RATIO OF MALE AND FEMALE POPULATION ACCORDING TO DISTRICTS, CENSUS, 1911.

	Coastal Districts.		Inland Districts.	
	Males.	Females.	Males.	Females.
I. ..	1.007	: 1.000	I. ..	1.257 : 1.000
II. ..	1.154	: 1.000	II. ..	1.858 : 1.000
III. ..	1.370	: 1.000	III. ..	1.901 : 1.000

Infantile Mortality.

The Commonwealth Statistician pointed out that "another test of salubrity often applied is that derived from a comparison of the death of infants under one year of age with the total births." Unfortunately for reasons stated previously, it was impossible to obtain data as to the number of deaths of infants under one year of age prior to 1907 and the decade from 1907 to 1916 has been selected as standard of comparison. Graph XIII. represents a comparison of the true infantile mortality (number of deaths of infants under one year of age in relation to 1,000 births) for the three coastal and three inland districts. In the coastal districts with the exception of 1909 and 1914 the infantile mortality rate in the north is lower than that for either the central

or southern districts. The average infantile mortality rate for the inland districts varies irregularly from year to year, but the totals for the 10 years for the northern and central districts are practically identical.

A conclusive proof for the conception that infantile mortality is greatly influenced by many other factors is Graph XIV., which visualizes the decrease in infantile mortality for the three decades 1882 to 1911. The detailed Queensland infantile mortality tables prior to 1907 only record separate figures for death of children under two years of age. For the preparation of the graph the rates were calculated by utilizing the number of deaths under two years of age and the birth rate for the two successive years. For example, in 1882 669 children under two years died in the first coastal district. The number of births for 1881 and 1882 registered was 6,659. On calculating the rate a factor of 10.05 was obtained, which does not represent the true infantile mortality, but only represents an arbitrarily chosen figure for the infantile mortality. Similar calculations were carried out for the years between 1882 and 1911 and the average thus obtained graphically represented. The first column indicates the infantile mortality for 1882 to 1891, the second the infantile mortality from 1892 to 1901 and the third from 1901 to 1911 for the southern coastal district and so on. In this way graphs for the three coastal and the three inland districts were prepared, which indicate that the number of deaths of children under two years has decreased steadily from decade to decade, a greater relative improvement having taken place in the northern district than in either of the other two.

Comparison of the Rate of Births and Infantile Mortalities of Victoria, Tasmania and Queensland.

The average birth rates for Victoria, Tasmania and Queensland have been compared in Graph XV. This graph shows that the birth rate is lowest in Victoria, highest in Tasmania, whilst Queensland occupies an intermediate position.

A comparison of the infantile mortality rate for the same States indicates that the total average infantile mortality rate for the three States over ten years shows only slight differences, although marked differences can be noticed for the individual years.

Conclusions.

For the purposes of a comparative statistical inquiry, Queensland, with the exception of the far north, a district extending from Port Douglas to Thursday Island, was divided into six districts, three coastal and three inland, situated in approximately the same latitude, representing southern, central and north Queensland. As a unit for comparison the decade between 1902 and 1911 was adopted, as the population figures could be considered fairly accurate on account of the census having taken place in 1901 and 1911; hospital admissions and hospital case mortality rates, district death rates and birth and infantile mortality rates were calculated.

(1) On the whole the average figures for hospital admissions to the northern hospitals were much higher than for the southern districts, but it could be proved that this fact is mainly due to an increased use of hospital facilities. On the whole, the average

death rates are practically the same in the northern and in the southern districts. Average birth rates are approximately the same in all coastal districts, but are lower in the central and northern inland districts, which fact may find its explanation in the smaller number of women of child-bearing age.

(2) The average infantile mortality rate for the northern coastal district is lower than that for the central or southern district and is practically identical for the three inland districts.

(3) The statistical inquiry has proved that north Queensland, as far as vital statistics are concerned, does not differ essentially from central and south Queensland and compares favourably with Victoria and Tasmania.

Reviews.

SANITARY SCIENCE.

In "Practical Australian Sanitation" (Volume I),¹ Dr. J. S. Purdy has revised the original work of the late Dr. Willis. This publication is intended as a reference book for municipal councils, stock owners, architects and sanitary engineers and is the authorized text book for the New South Wales Government technical education classes in sanitation. It is divided into two parts, in the first of which the subject of sanitary law is dealt with. Part 2 covers such public health matters as nuisances, inspection of premises, common lodging houses, refuse disposal, food, air, water supply and infectious diseases.

It is explained in the preface that this book was compiled as the first volume of a series to cover the whole course for the certificate of nuisance inspector issued by the London Royal Sanitary Institute and the course prescribed for the certificate of the Sydney Technical College, the possession of which qualifies the holder for the position of health inspector throughout New South Wales. The work embraces the course of lectures given at the College by the late Dr. Willis and in Part 1 includes the acts, regulations, ordinances and by-laws in New South Wales which a sanitary inspector should know. The details of this legislation are set out in a clear and comprehensive manner, which should appeal to such officials whether they belong to Government departments or local authorities.

Dr. Purdy's long experience in public health work has insured that the chapters on the various subjects in Part 2 have been carefully compiled. The information supplied under such important headings as infectious and communicable diseases, food, ventilation, water supply and disinfection, is up-to-date and set out in clear, sound style.

The disposal of night-soil from pan closets by drying in special apparatus for conversion into poudrette, is not described, while no reference is made to the use of chemical closets, although they have been employed for some time and appear to possess advantages in unsewered areas and special situations, such as mines.

The illustrations are of a practical nature and include many which bear the imprimatur of the office of the Director-General of Public Health of New South Wales. The volume should prove a valuable manual for persons desiring to acquire the required knowledge in order to fit them for the examinations held by the Technical College, as well as a useful book of reference for officials engaged in the discharge of public health work generally.

It has been announced that Dr. W. T. Williamson will retire from his position as Medical Superintendent of the Mental Hospital, Parramatta, New South Wales, on December 28, 1920.

¹ Practical Australian Sanitation: Volume I, Public Health, Sanitary Law, Infection and Disinfection, Inspection of Premises and of Food, by the late C. J. S. Willis, with Introductory Chapter by J. L. Bruce, edited by J. S. Purdy, D.S.O., M.D., C.M., D.P.H., F.R.S.: 1920. Sydney: William Brooks & Company, Limited; Crown 8vo. pp. 288, Illustrated by 28 figures. Price, 25s.

The Medical Journal of Australia.

SATURDAY, SEPTEMBER 3, 1921.

The Medical Curriculum.

The faculties of the medical schools of our Universities are recasting the curriculum. This means that an attempt is being made to re-arrange the work to be completed during the course of between five and six years by the men and women who are to be the doctors of the next generation. The need for revision is admitted by all. Difference of opinion exists only in regard to the extent of the essential changes. The medical faculties work under a disability in that the Senates and Councils, which are largely composed of individuals without any special knowledge of medical education, have to be persuaded that the proposed alterations are advisable. Moreover, there is an atmosphere of conservatism within the walls of even the youngest university; drastic amendment and crass departures from the old order do not find favour. In these circumstances it is by no means surprising that university reform is, as a rule, gradual and modifying, rather than sudden and fundamental. The opinion has been expressed that the complete reconstruction of the curriculum would involve too great a risk, because of the absence of experience of the innovation, to be justified. The same fearful criticism might be levelled at any reform with as much or as little weight of reason. In the problem of the training of students for their admission into the profession of medicine, certain general principles should be taken into consideration, if progress is to be made at a wholesome rate. In the first place, it must be admitted that the students of to-day should be educated on scientific lines. Practical details in diagnosis and treatment can be learned by experience after graduation; the fundamental scientific data on which the superstructure of medicine rests, if not learned during student life, will never be acquired at a later date.

The second principle to which attention should be drawn, is that systematic lectures convey information at a slow rate that can be gained more thoroughly and

more rapidly by reading books. On the other hand, teaching by demonstration and by actual practice can be replaced by no other method.

The third principle of great importance in this connexion is that the technical information to be imparted to medical students should be applied science. It is unreasonable to ask the young man or woman to enter a medical school to study languages, elementary chemistry, elementary physics, mathematics and botany. These subjects are necessary in the general education of every child who is destined to live with the aid of his intelligence. They represent the minimum requirements of the educated citizen and are not peculiar to medicine. But the chemistry, physics, mathematics and botany taught in the medical school must be adapted to the use to which they are put in medical work.

The Senate of the University of Sydney has sanctioned some minor reforms suggested to them by the Faculty of Medicine. The course is to be extended by one term, to relieve the over-burdened student. Anatomy is to be begun in the second year and changes are to be made in regard to the time of the annual examinations. More systematic lectures are to be introduced, notably additional lectures in obstetrics and in psychiatry, and the student will be required to attend courses of lectures on five special subjects instead of three. Instead of 30 lectures on public health, there will be 50 on preventive medicine. It will be seen that the reform is a piece of patch work, in some respects cast on sound lines and in others of a timid nature. The teaching of bio-chemistry and general physiology, by which is probably meant medical chemistry and medical physics, is still to be compressed into a short period of the early stage, before the student has been able to grasp many of the points of application. It is true that an extra term is to be given to these fundamental subjects. When it is considered that all medical knowledge is chemical, physical or biological, surely it is futile to cut off the source of information at a period when this knowledge can be applied with advantage. If the terms "medical chemistry" and "medical physics" were adopted and the chairs renamed, it would be easier to advance the next step. The Professor of Medical Chemistry should be responsible for the proper teaching of the student of the chemical characters of the

disturbances of the organs of digestion, excretion, internal secretion and so on. Is it reasonable to expect the medical practitioner to have a sound understanding of diseases affecting the metabolism unless the student is enabled to master the details of calorimetry and the reaction of the organism to the products of incomplete combustion of proteins, carbohydrates and fats? It is useless to teach the second year student the chemistry of the amino-acids until he has become familiar with the clinical appearances and manifestations of disordered protein metabolism. Similarly the application of physical science to clinical medicine necessitates a continued study of medical physics throughout the whole course.

It has been pointed out in these columns that the creation of chairs on subjects which are but branches of medicine, is unsound. The amended curriculum confirms the opinion expressed a short time ago that the chair of psychiatry would be little more than a glorified lectureship. From a purely practical point of view, there is urgent need for better and more scientific training in obstetrics. Instead of bread, the University offers us a stone. More systematic lectures! The student should be required to attend more women during parturition together with his teacher and to acquire knowledge by direct experience in this highly important branch of surgery. The substitution of the term "preventive medicine" for the obsolete words "public health" is a welcome event. Emphasis must again be placed on the fact that medicine has two great divisions, curative medicine and preventive medicine. The former is again divided into two great subjects, medicine proper and surgery. The adage "It is better to prevent than to cure!" is old enough to have penetrated into the portals of our universities. Why has preventive medicine, the most important function of the medical profession, no professor, but merely a lecturer who is required to deliver 50 systematic lectures during which the students may doze at will? There is much practical work to be undertaken in connexion with this subject. The reform of the curriculum at Sydney does not go nearly far enough.

THE "TOXÆMIAS" OF PREGNANCY.

It has become a fashion in almost every branch of medicine during the past few years to attribute various, otherwise unexplained, symptom complexes to

the presence of a toxin in the blood. In a few, very few, instances it has been demonstrated that the symptoms are caused by a poison of known composition. There would be no serious objection to the use of the term toxæmia, if it were clearly understood that the alleged poison was hypothetical and that too great importance must not be attached to the supposed cause of the condition. Unfortunately, the majority of those who employ the term, are firmly convinced that the pathology of these conditions has been proven beyond question and that it would be merely of academic interest to ascertain the chemical constitution of the poison. For many years the pathology of eclampsia and of *hyperemesis gravidarum* has been the subject of keen dispute. More recently obstetricians and pathologists have comforted themselves by assuming that these two conditions, as well as a number of others complicating pregnancy, are due to a toxæmia. It is unscientific to group a number of conditions under one name on a mere hypothesis that they have a common or identical pathogenesis. Since it is a matter of surmise whether eclampsia and excessive vomiting of pregnancy are or are not the result of the presence in the circulating blood of some abnormal, harmful agent, it is obviously quite unwarrantable to include both conditions under one term.

Eclampsia can be distinguished from a true acute nephritis. In the former the parenchyma of the kidneys is not the site of definite inflammatory or degenerative changes. Moreover, it has been shown that in eclampsia the renal filter is not damaged in a physical sense. The differentiation between eclampsia and uremia should not be difficult, since the primary conditions are essentially different. Incidentally, it may be pointed out that the term uremia should be changed, for it has long been proven that this condition is not determined by a large retention of urea in the blood. The hypothesis that this state is caused by an accumulation of ammonium or potassium salts in the blood has also been disproved, while the more recent suggestion, that the substance responsible for the signs and symptoms is creatinin, lacks convincing evidence. It is therefore urgently necessary for more information to be sought in regard to the abnormal constituents of the blood and of the urine in the two conditions, eclampsia and uremia. In the absence of this information, it becomes essential that obstetricians should investigate the metabolic processes in eclampsia and nephritis, in order that the essential characteristics of both may be recognizable and the nature of the conditions may be studied. Dr. R. L. Mackenzie Wallis has recently published some very instructive observations, from which important lessons may be learned.¹ His communication suffers from the fundamental defect that he accepts with blind faith a toxic causation of the so-called toxæmias of pregnancy. In the first place, he calls attention to the work of Wohlgemuth, Corbett and Noguchi, who demonstrated that the urine normally contains a ferment capable of digesting starch, which they call diastase. The quantity of diastase in the blood is normally proportionate to the quantity excreted in the urine. When the renal epi-

¹ *The Journal of Obstetrics and Gynaecology of the British Empire*, Spring, 1921 (No. 1 of the New Series).

thelium is damaged, there is a diminution of the diastase excreted, while when the kidney fails as a filter, the quantity is increased. In pancreatic disease the diastase content of the urine is increased. Dr. Mackenzie Wallis has found that the diastase excreted in the urine is largely increased in eclampsia and in the vomiting of pregnancy, while it is normal in quantity in such conditions as heart disease, pyelitis, chronic interstitial nephritis, neurotic vomiting, etc., complicating pregnancy. On the other hand, less than the normal amount is excreted in parenchymatous nephritis. He is inclined to the opinion that an increase in the diastase content of the urine, in the presence of suspicious symptoms in pregnant women, is diagnostic of "toxaemia." In the next place, he has found that the quantity of globulin is relatively large when compared with albumin in the urine in eclampsia, while in nephritis the ratio of globulin to albumin is considerably lower. He has studied the concentration of urea in the blood and claims that information of value in prognosis can be gleaned from the estimation of the blood urea and from MacLean's test for the concentration of urea in the urine after the ingestion of 15 grammes of urea by mouth.

Dr. Mackenzie Wallis has failed to detect any evidence of a pancreatic lesion in eclampsia or in any of the other syndromes included under the term toxæmia of pregnancy. The blood sugar has been found to be normal. On the other hand, he adduces some evidence in favour of a glomerulitis in these cases. He regards this physical change as a vascular change and would attribute it to the action of a poison on the glomeruli. The appearance of acetone bodies in the urine is held to be due to the unstable equilibrium of the carbo-hydrate metabolism of pregnant women. It occurs in response to excessive vomiting. From these data it may be concluded that in eclampsia there is a vascular change produced by some unknown cause, which leads to the passage of a relatively large amount of globulin and a small quantity of albumin. The starch ferment of the blood finds its way through the renal filter more readily than when the kidney is not impaired. These chemical characters are effects and not causes of the condition and therefore throw no direct light on the pathology of eclampsia. They may, however, indicate the direction in which further researches should be prosecuted. Dr. Mackenzie Wallis's article stands in striking relief in this respect to that of Dr. Edward P. Davis, who permits the results of empirical treatment to obscure the points at issue.²

University Intelligence.

THE MEDICAL CURRICULUM AT THE SYDNEY UNIVERSITY.

The Senate of the University of Sydney approved at a meeting held on August 15, 1921, certain alterations in the medical curriculum after consideration of a memorandum prepared by the Dean of the Faculty of Medicine and endorsed by the Faculty. At present the subjects of the first year include botany, zoology, inorganic and organic chemistry, physics and introductory anatomy. Introductory

anatomy consists of lectures and demonstrations on human embryology. It is held that embryology is too difficult a subject for a student who has had no previous scientific training. Moreover, the amount of work to be accomplished in the first year has become excessive. It has, therefore, been determined to remove the subject of introductory anatomy. The subjects of the first year will therefore be:

Chemistry, physics, botany and zoology.

The second year is to be occupied by training in embryology in addition to the subjects taught at present. As this would lead to an extra congestion, it has been arranged that the "second degree" examination is to be held at the end of the Michaelmas term, i.e., in December, instead of at the end of the Trinity term in August. This permits the student to devote three terms to the subjects of the second year. Histology, which is essentially a branch of anatomy, is to be transferred from the Department of Physiology to that of Anatomy. In regard to physiology, the removal of histology will enable the two professors to expand their teaching, especially in the direction of more advanced bio-chemistry. The third year begins in the Lent term and continues for the complete academic year. In this way the student during the six terms of the second and third years will take up the subjects:

Anatomy, including embryology and histology, physiology, including bio-chemistry and general physiology, pharmacology and applied anatomy.

The "third degree" examination is held at present in August. Under the new scheme this examination will be held in December. For students who fail to pass this examination, there will be a deferred examination in March. By working through the long vacation, there would be no loss of time resulting from a single failure.

The fourth year will commence in the Lent term and the "fourth degree examination" will be held in December instead of August. The subjects at present are *materia medica* and therapeutics, pharmacy, pathology and bacteriology, special pathology, surgery, surgical anatomy and operative surgery, clinical surgery, medicine, obstetrics and tutorial medicine. In the new curriculum the subjects will be as follows:

Pathology and bacteriology (three terms), medicine (spread over three terms), surgery and clinical surgery, hospital practice, including tutorial medicine and surgery.

It will be noted that the subject of pathology and bacteriology will form the main study and that systematic lectures in surgery and medicine will also be given.

The changes in the fifth year are also considerable. At present the student takes up medicine in the Lent term, tutorial medicine in the same term, attends 30 lectures on gynaecology, 20 on medical jurisprudence and 30 on public health and works in the medical wards of his hospital. Under the new regime he will attend lectures on surgery and medicine, gynaecology (30), obstetrics (50), medical jurisprudence (20), preventive medicine (50) and he will have therapeutics and *materia medica* for one term, 20 hours for practical pharmacy and three hours for clinical medicine.

The sixth year will comprise two terms. The subjects will be diseases of children, of the skin and of the ear, nose and throat and psychiatry. Instruction will be given by lectures and in the clinics. The final degree examination will be held in August instead of in March.

Brigadier-General Wisdom, the Administrator of the mandated territory of New Guinea, has apprised the Federal authorities of a serious outbreak of variola in Dutch New Guinea, which threatens to spread to the mandated portion of Papua. In view of the danger of the situation the Director-General of Health had dispatched three medical officers, Dr. L. P. Brent, Dr. N. J. O'Shea and a third medical practitioner, with five orderlies, by the s.s. *Morinda*. They will work under the supervision of Dr. Andrew Honman, the Principal Medical Officer of Rabaul.

A notice in the *South Australian Government Gazette*, No. 34, of August 18, 1921, states that varicella is now a notifiable disease within the meaning of the *Health Act, 1898*, of South Australia.

² *Journal of the American Medical Association*, June 25, 1921.

Abstracts from Current Medical Literature.

DERMATOLOGY.

(101) Tissue Changes Following the Administration of Arsenical and Other Compounds.

A report of a number of experiments made by Kolmer and Lucke, to determine the changes produced in rabbits and other animals by the experimental injection of "606," "914" and mercurial compounds, appears in the *Archives of Dermatology and Syphilology*, April, 1921. The experiments were carried out by the authors with the idea of determining the comparative toxicity and therapeutic value of the arsenical compounds commonly used and as a guide to the preparation of similar substances for the treatment of syphilis. The pathological examination of the animals showed similar tissue changes whether they succumbed at the time of injection or were destroyed at chosen intervals later. These changes varied considerably among animals of the same species which were subjected to identical methods of administration. The pathological findings show that unneutralized "606" is very toxic. The animal dies immediately and *post mortem* every organ shows thrombosis of a peculiar colouration. Owing, however, to the suddenness of death no tissue changes are apparent. After a large dose, e.g., ten times stronger than usual, degenerative changes predominate, the liver, kidneys, heart, spleen and suprarenal glands being most affected. The brain tissue is practically unaltered. When multiple therapeutic doses of neutralized "606" were administered, the tissue changes were inconspicuous and not sufficiently gross to interfere with the functioning of the organs. When the "914" group was given, the tissue changes were similar, but not as severe. With the soluble and insoluble mercurial compounds the authors found, as with the arsenical compounds, varying degrees of susceptibility in animals of the same species. The kidneys and brain showed the most marked tissue changes, the tubules, perhaps, being the most constant site of injury.

In a clinical commentary on these studies, Schamberg draws attention *inter alia* to the effect of arsenical compounds on the suprarenal glands and on the chromaffin cells. He suggests that the reactions sometimes observed after the intravenous injection of arsenical compounds, e.g., vaso-paresis and a great fall of blood pressure, may in some instances be due to the inhibition of the production of epinephrin. He also suggests that, in the light of these experiments, the large incidence of jaundice and acute yellow atrophy may be due to the combined administration of mercurial and arsenical compounds. He quotes many cases which give support to his views that the synchronous administration of full therapeutic doses of mercury and arsenic is scientifically wrong, amongst them 'a

remarkable series of cases of delayed arsenical poisoning reported in the *Lancet*, April, 1920. In this series the symptoms appeared, on an average, 43 days after the last arsenical treatment. The treatment had been extensive, "606" and mercury having been each administered once a week for eight weeks. Schamberg submits that the pathogenesis of these cases is apparent. The mercury in these and similar instances irritates the kidneys and inhibits their power to eliminate arsenic. Arsenic has a special affinity for liver cells and therefore causes focal necroses, either from too long contact with the liver cells or from oxidation and liberation of free arsenic. The author calls attention to the hitherto unrecorded pathological condition which Kolmer and Lucke have found in the brains of animals after treatment with mercury. He suggests that the same histological picture may be apparent in higher animals. In conclusion, the author deprecates the simultaneous administration of full therapeutic doses of mercury and arsenic and advises that the course of mercury be subsequent to that of arsenic. If, however, the two drugs be administered at the same time, the dose of each should be in inverse proportion to that of the other. Over 50 excellent micro-photographs illustrate the article and tables indicating the doses and results are appended.

(102) Backache in Syphilis.

Joseph Klauder (*Archives of Dermatology and Syphilis*, June, 1921) states that backache occurring in the acute secondary and later periods of syphilis is most frequently due to meningeal involvement of the spinal cord. The pain is immediately due to irritation of the posterior (sensory) roots, caused by one of four factors, namely, pressure by inflamed membranes in which individual nerve fibres may become involved, pressure by inflamed vessels, gummata localized in the roots and in rare instances a root neuritis associated with periostitis of the vertebrae. The specific meningitis is usually most severe in the dorsal region. The backache is one feature of the meningeal syndrome, which includes pain between the shoulders, paraesthesia of various kinds and radiating girdle pains. The tendon and skin reflexes are increased. Backache, stiffness and weariness are the chief complaints of the patient. On examination the physician discovers the presence of rigidity of the muscles of the back and tenderness on percussion of the vertebral column. Backache associated with involvement of the lumbar muscles (sometimes present in the secondary stage) is more a manifestation of toxæmia than of a syphilitic myositis. Syphilitic involvement of the vertebrae occurs more often in the cervical than in the lumbar vertebrae and usually affects the spinous and transverse processes. The commonest lesion in syphilis of the spine is synovitis of the vertebral joints and backache may be due to this cause. The signs of this affection are: Deformity caused by the prolongation of the dorsal curve into

the dorso-lumbar region, localized rigidity and hypo-tonicity of the sacro-iliac and hip joints.

(103) Pruritus Ani.

J. P. Lockhart Mummery (*Proc. Royal Society of Medicine*, March, 1921) distinguishes five types of *pruritus ani*, grouped according to their causes. They are: (1) the cases associated with some general morbid condition (such as glycosuria), (2) the parasitic group, (3) those secondary to some lesion in the anal region, (4) paroxysmal pruritus, and (5) those without any discoverable local lesion. The most frequent conditions which lead to *pruritus ani* are those causing an undue amount of moisture in the anal region, such as ulcer, the removal of which gives permanent relief. In chronic cases of over two years' standing, removal of the local lesion seldom cures the patient, because constant scratching of the part causes a local fibrosis and a streptococcal infection is superimposed. Amongst other causes described by different authors, are infections with *Oxyuris vermicularis* (which, according to Arthur Whitfield, are far more frequent in adults than is generally supposed), tinea, psoriasis and other generalized skin eruptions. Apart from Bell's operation, the remedies are to avoid greasy applications, to keep the parts dry with suitable dusting powders and to use X-rays, ionization, protein sensitization and diathermy.

(104) Removal of Warts.

Theodore Lawless (*Archives of Dermat. and Syph.*, January, 1921) describes a painless and effective method of removing warts. He uses a high frequency apparatus, with a metallic needle-holder in place of a vacuum electrode. Into the needle-holder a fine platinum or sewing needle is inserted. The needle is introduced into the base of the wart and the current turned on. Alternatively the needle may be applied to the apex or brought to within 3 mm. of the lesion and sparked until charring is observed. The results are claimed to be excellent. A local anaesthetic is not necessary.

RADIOLOGY.

(105) Radiography in Infantile Syphilis.

P. G. Shipley, J. W. Pearson, A. A. Veech and C. H. Greene have contributed an article on the X-ray appearances of the skeletons of the fetus and infant who are victims of syphilis (*Bulletin of the Johns Hopkins Hospital*, March, 1921). The Wassermann test in the early weeks of life gives uncertain results and the clinical picture of the disease is by no means characteristic. Moreover, a mother may have no serological or clinical signs of syphilis and yet give birth to a syphilitic child. Hence any aid to the diagnosis is welcome. In the majority of syphilitic infants bone changes may be demonstrated and in a series

of 300 examinations of apparently sound infants 25% showed definite luetic bone affection. No bone is exempt from involvement, but the skull, ribs and vertebrae are seldom affected. The skiagrams show irregular calcification and ossification and in the fetus the changes are mostly confined to the epiphyseal-diaphyseal region. Periosteal changes occur only after birth and probably the dragging on muscular attachments predispose to their onset. There is an intensification of the shadow of the bone cast at the epiphyseal line which becomes broader and forms a cap over the end of the diaphysis; the provisional zone of cartilage becomes much widened. The condition is an osteochondritis and occasionally the thickened area may show areas of rarefaction which give the bone a ragged appearance.

(106) Radiation of Breast Cancer.

Douglas Quick has contributed a paper on the pre-operative and post-operative treatment of breast cancer by radiations (*American Journal of Roentgenology*, December, 1920). Large percentages of recoveries following operation have been reported by leading surgeons in cases of breast cancer when the lesions have been subjected to radiations before and after operation. The radiations do not interfere with the surgical procedures if they are applied before or after operation, but the method of application into the open wound is cumbersome and presents no advantages. Pre-operative treatment causes some atrophy of the malignant growth and closes many of the lymph channels. The areas treated are the involved breast, the axillary, pectoral and supraclavicular regions, the lateral chest wall and the upper abdominal area. In advanced cases or when the inner quadrant of the breast is involved, the treatment includes the opposite breast and glandular areas. Each area receives seven milliampères of current through a Coolidge tube at a 24 cm. gap with the target at 20 cm. distance, 4 mm. of aluminium being used as a filter. Two weeks after this dosage has been applied, operation is performed and two weeks later a further cycle of radiations is applied and repeated at intervals of four weeks.

(107) Röntgenological Technique.

R. D. Carman (*American Journal of Roentgenology*, December, 1920) briefly describes the technique employed in the radiographic examination of patients at the Mayo Clinic. In renal work four plates, 25 cm. by 20 cm. in size, are used, one for each kidney, one for the central ureters and one for the lower ureters and bladder, a small cone diaphragm being utilized. All patients suffering from thoracic affections are radiographed stereoscopically as well as being screened. In gastro-intestinal work the double meal technique is employed; the first or motor meal consists of 114 grammes of barium sulphate in a cooked cereal and the second or six-hour meal consists of 114

grammes of barium sulphate, 4 grammes of sodium bicarbonate and 230 mils of water. After the second meal the stomach and duodenal cap are studied on the screen and skiagrams taken as necessary. For examination of the colon the barium enema is used. The author also describes the admirable follow-up system by which all operative and *post mortem* results are made known to the radiologist. Carman now makes his gastro-intestinal examinations independently of the clinician, but in all other work there is a correlation of the clinical and radiographic findings.

(108) The Bucky Diaphragm.

H. E. Potter (*Archives of Radiology and Electrotherapy*, March, 1921) gives a description of the Bucky diaphragm as modified by himself for use in practical radiography. When X-rays pass through the body secondary rays are produced and tend to fog the plates. It was found that a diaphragm placed between the patient and the plate, cut out many, if not the majority of these rays. Such diaphragms, of course, were shown in the radiogram as cross lines and spoiled many radiograms taken for diagnostic purposes. Potter has arranged the new diaphragm in such a way that the grid is moved across the field at such a rate that the thin plates of the diaphragm do not show in the resultant radiogram. Such pictures show wonderful contrast and even in stout people the bodies of the vertebrae show clearly the cancellous structure of the bone. The use of this diaphragm prolongs the exposure, but if the radiographer uses harder tubes than usual he can obtain excellent negatives which show effective contrast.

(109) Spinal Radiography.

H. E. Potter contributes a paper to the *American Journal of Roentgenology*, March, 1921, on the application of the Bucky principle in the examination of the spine. The Potter-Bucky diaphragm consists of a grid of fine parallel plates, which travels in an arc of a circle between the patient and the X-ray plate during the exposure and serves to absorb the secondary rays which are produced as the original X-rays pass through the body. The movement of the grid during the exposure neutralizes its own shadow and plates produced by this method show wonderful contrast and clearness in the stoutest subjects and equal in quality the fine skiagrams usually seen in the examination of the extremities. For lateral radiography of the spine it is extremely valuable. In addition, it is possible to expose equally all parts of the largest plates.

(110) Oral Sepsis.

J. H. Woodroffe (*Archives of Radiology and Electrotherapy*, December, 1920) contributes a short paper on oral sepsis and its radiographic diagnosis. Oral sepsis either causes or seriously complicates such conditions as tritis, furunculosis, arthritis, chronic rheu-

matis, anaemia, digestive disturbances, colitis and many obscure fevers. In all of these conditions a radiographic examination of the teeth should be made before treatment is commenced. Dental sepsis may arise as an affection about the tooth apex or as an affection of the gum margin. In the former case it follows death of the pulp and the organisms enter through the apical canal and if of low virulence, they produce a slow, chronic, inflammatory change with chronic abscess formation. If the organism is of high virulence an acute abscess is formed. Chronic abscess can only be diagnosed by means of dental radiograms and cannot be detected by the ordinary methods of dental examination. Pyorrhoeal affections commence as a gingivitis and gradually extend along the root towards the apex and destroy the alveolus, thus loosening the tooth. Radiograms showing the various conditions illustrate this paper.

(111) Blood Changes in Radium Workers.

J. C. Mottram, of the Radium Institute, discusses the red-cell count of persons handling radium (*Archives of Radiology and Electrotherapy*, December, 1920). This paper is a sequel to a contribution by the author on the leucopenia of radium workers in whom the white cell content may be reduced by as much as half. Radium workers also show a diminution of the red cell count with an increase of the colour index. Three fatal cases of anaemia of the aplastic type have occurred in the Radium Institute. One of these workers had handled radium for ten years, one for eight years and one for five years. Recovery of the blood count after removal from radium takes place slowly. The penetrating γ rays probably destroy the red marrow while the soft β rays have no such destructive action. Various protective measures have been adopted to protect the workers since these changes have been noted.

(112) Radiographic Investigation of Atrophy of the Liver.

G. S. Strathy (*Journ. Canadian Med. Assoc.*, December, 1920) has studied from a radiographical point of view a large number of cases of atrophy of the liver following arsenical poisoning. In most instances the condition followed the administration of salvarsan. He measured the length of the liver shadow in the right nipple and right parasternal lines at the end of expiration. The normal liver was found to vary in dimensions from 14 cm. to 16.5 cm. in the parasternal line and from 16 cm. to 18.5 cm. in the nipple line. The shadow was found to extend transversely to the left across the gas-bubble in the cardiac end of the stomach. When atrophy occurred the liver shadow seldom extended transversely beyond the vertical mid-line of the body. Shrinkage of the transverse diameter was a more marked feature than diminution of the vertical measurement.

British Medical Association News.

SCIENTIFIC.

A meeting of the New South Wales Branch was held in the Sydney Hospital on June 10, 1921, Dr. F. Barrington, the President, in the chair.

Dr. Keith Inglis exhibited a series of beautiful pathological specimens, which were examined by members in the outpatients' department. Here, also, Dr. J. G. Edwards showed a number of excellent skiagrams. One in particular was of quaint interest. It illustrated the presence of a dislocation of the femur in a greyhound. The animal was a valuable courser and had become lame. The dislocation had since been reduced and the sporting value of the animal restored.

Dr. R. I. Furber showed a baby girl who had an imperforate anus. The child was eight weeks old and had an imperforate anus with a vulvar outlet. The mal-development had been noticed immediately after birth. An outlet had been found at the anterior border of the posterior commissure where the two *labia majora* joined posteriorly. There was no evidence of anal development.

Dr. Furber asked whether any operative interference was advisable. The child had control over the rectum. As a rule, she had two motions daily and cried out during the act. The *pubo-rectalis* portion of the *levator ani* muscle acted as a strong sphincter and Goll had called this portion the *sphincter recti*. Dr. Furber described the operative procedure carried out in similar cases, but emphasized the opinion that, while the patient had good control, it was better to avoid interference.

Dr. J. Macdonald Gill read a paper by himself and Dr. R. Steer Bowker on a case of spinal cord tumour. This paper will be published in a subsequent issue.

Dr. Gill then described a case of hydatid disease of the vertebrae. The patient was a labourer, 47 years of age, who complained on admission on August 28, 1920, of inability to move his legs. His first symptom was pain in the back and hip. He had been treated for rheumatism, but gradually his ability to walk had diminished till three weeks prior to admission he was bed-ridden. On admission all power of movement was found to be lost in the right leg. He could, however, bend his left leg at the knee. The knee jerks were exaggerated and ankle clonus was present in the right leg. The plantar reflex was extensor in both feet. On August 31, 1920, the patient was quite unable to move either limb from the hip downwards. There was no muscular wasting. There was slight loss of vesical control. There was diminution of sensation to touch, heat and cold in both legs. No deformity of the spine was obvious, no pain on pressure over the vertebrae, no limitation of movement. A blood examination revealed no abnormality and there was no reaction to the Wassermann test. Some fluid was withdrawn by lumbar puncture and was found to contain a few lymphocytes. It also failed to react to the Wassermann test. A few days later the patient lost control over the bladder and rectum. He became very weak and exhausted. The pain, which radiated round the trunk about 5 cm. above the umbilicus, became extremely severe. It recurred at intervals of about five minutes and lasted almost a minute. On September 8, 1920, he had complete motor paralysis below the umbilicus. The knee jerk was unobtainable on both sides and there was no plantar reflex. All forms of sensation were lost from the ninth thoracic distribution downwards. On September 14 the patient was much worse. He was febrile and complained of severe pain over the right shoulder and on the outer side of the right arm. The grip of his right hand was almost lost and there was considerable loss of power in his left hand. There was some degree of anaesthesia in both arms. The patient developed a large bed-sore and on September 17 he died. A *post mortem* examination revealed a hydatid cyst in the lower dorsal region of the cord with numerous daughter cysts. A secondary cyst, doubtless communicating with the first, was found in the muscular tissue to one side of the spine. It was small and had not been detected during life. The hydatid had destroyed the greater part of the body of one vertebra and its cavity communicated by a large opening with the spinal canal in the middle line.

Dr. Gill remarked that had a correct diagnosis been made earlier during life, the condition could probably have been treated successfully by operation. Signs of acute ascending

myelitis had developed on the fifth day after admission and proved fatal in less than three weeks. This had rendered operation out of the question.

Lastly, Dr. Gill showed a patient suffering from syphilitic meningitis who was undergoing specific treatment.

Sir Herbert Maitland described two cases of cervical tumour and one of intra-thoracic goitre. He also described the treatment of a patient suffering from cancer of the pelvic colon and of another suffering from malignant disease of the face.

Dr. C. E. Corlette showed certain exhibits, including an improved apparatus for the lifting of patients from bed and specimens of experimental fractures.

He also exhibited, with Dr. Keith Inglis, a specimen of mycetoma of the foot. The patient who had suffered from this condition, was a woman who had never been out of Sydney. She had noticed a soft swelling appear in the dorsum of the foot. The condition had been considered some seven years previously to be one of tuberculous teno-synovitis, in which pus had formed. Dr. Corlette had incised the swelling, had removed gelatinous granulation tissue and had packed the wound. The condition had been reported pathologically as tuberculous, possibly in view of the presence of giant cells. The patient left hospital and was not seen for about five years. She then returned and stated that she had been bed-ridden for two years. She agreed to amputation of the foot, which was done. Professor A. Watson had made the suggestion that the condition was one of "Madura foot." No mycelium had, however, been found. The foot was an excellent museum specimen.

Dr. Corlette next read notes on the treatment of calcified hydatid cysts. Publication of these notes has been deferred to an early issue.

Finally, he described a condition involving the anus and rectum, which he had diagnosed as *esthiomene*. The patient was a woman of 25 years and she had suffered from the condition since the age of 14. There was a ring of nodular, raised, fleshy tissue around the anus. It had extended for a finger's length up the rectum, where it took the form of more discrete nodules. It had also involved the vulva and clitoris. In 1920 Dr. Corlette had trimmed the swelling down. The patient returned this year complaining of pain and lack of control over the rectum. She had been treated with salvarsan and had completely regained control.

Was the condition *esthiomene*? It certainly answered to descriptions of that disease. *Esthiomene* was the name given to so-called lupus involving the vulva. One of six cases described in the *Journal of Obstetrics and Gynaecology of the British Empire*, June, 1913, by Lena Kurz, had proved to be epitheliomatous in nature. Some authorities had stated that the condition was to be considered a syphiloma. This patient had responded to treatment with salvarsan. But improvement under salvarsan was no proof of the syphilitic nature of the disease. Any granuloma might improve under salvarsan therapy.

Dr. Keith Inglis described the pathological appearances of the specimen. The first report had stated that the condition was tuberculous, as lymphocytes and giant cells had been found. At the second examination it was found that the giant cells contained curious particles of an inorganic, crystalline nature, which failed to take on the ordinary stains. The histological picture was in keeping with the diagnosis of syphiloma, tuberculoma or any other granuloma.

Dr. H. S. Stacy described a plastic operation which he had performed on the skull of a man of 40 years. The patient, E.L., had received a through-and-through bullet wound of the skull in the Boer War in 1901. About five or six years ago he began to suffer from fits, involving the left side of the body, and followed by severe headache lasting about six hours. These fits recurred every three to five months. Several years previously the opening in the skull over the frontal region had been enlarged, but this had given him no relief. On examination, an opening in the right side of the frontal bone about the size of half a crown was found. Further back over the right parietal region a much smaller defect was found. It was Dr. Stacey's experience that convulsions following gun shot wounds of the skull, were always the result of a subdural lesion and he was not surprised that the patient had obtained no relief after the mere removal of bone. He decided ten months since to explore subdurally, expecting to find adhesions of the *dura mater* to the cerebral cortex. These adhesions were found

both in the frontal and parietal wounds. In each case, after controlling the oozing resulting from the separation by means of hot pads, he interposed *fascia lata* from the thigh. The patient had made an uneventful recovery and since the operation had had no convulsions or headache. In addition, he had lost that general feeling of insecurity, nervousness and lack of confidence from which he had suffered before. He was now able to do light work. In his own words he "felt a new man."

In reference to plastic operations on the skull in general, Dr. Stacy stated that the surgeon should proceed with caution and not be too optimistic, as recurrences might take place. He had seen several of his own patients during the last few months. They had appeared to be doing well for as long as 18 months and the attacks had then recurred as badly as ever. He was inclined to think that the results were better and the cure more likely to be permanent when the lesion was one of many years' standing. He based that conclusion on three facts.

Firstly, there was bacterial infection of the cortex, dura, etc., at the time of the initial wounding. That infection was apt to recur very mildly when the skull was subjected afresh to the trauma of the operation. As years passed the infection tended to die out. In connexion with those cases in which the attacks recurred, sepsis had not been obvious in the wound, but that fact did not deny its existence in a very mild form deeper down. If that hypothesis were true, it was not hard to understand how adhesions might form afresh.

Secondly, in the more recent cases the vascularity was greater and the oozing resulting from separation of the adhesions was more difficult to stop completely. In the older cases the vascularity was not so marked and absolute haemostasis (an essential) was easier to secure.

In the third place, it was Dr. Stacy's experience that the few recurrences that had taken place were in the victims of gun shot wounds in the recent war and not in injuries of many years' standing. The results had also been very good in cases of civilian injuries, such as depressed fractures with cerebral injuries. Sepsis was not as universal a feature of the latter conditions as of shell wounds in the recent war.

Dr. Stacy emphasized the necessity of working warily in the neighbourhood of sinuses. He had lost one patient as the result of haemorrhage from the longitudinal sinus. It might be better to advise non-operative procedures. In another case he had made the mistake of assuming that the cortical adhesions were the sole lesion. A *post mortem* examination several years later revealed the existence of an abscess which had originated years before from a compound fracture of the skull. The patient had been admitted from time to time to a mental hospital for years, suffering from ungovernable fits of temper and convulsions.

In the performance of the operation he had found the mechanical method of administering ether of inestimable advantage. With it there was an absence of congestion of the pial veins, puncture of which might mar the whole operation.

In some cases of idiopathic epilepsy the surgeon might obtain history of a fall on the head during childhood. Such a history would occasionally influence the surgeon to give the patient the benefit of an exploratory operation. In one such instance Dr. Stacy had operated, only to find no naked eye lesion. Of course, the wound was merely sown up again and neither harm nor good ensued.

Dr. Stacy next described a case of gun shot wound of the median and ulnar nerves. The patient, an ex-soldier, of 34 years, had been wounded on August 8, 1918, by a shrapnel bullet, which entered the right shoulder, passed through the axilla and penetrated the right lung. Haemothorax and an axillary aneurysm had resulted, both of which had been subjected to operation, the latter having been excised at Harefield Hospital.

In March, 1919, when the patient first came under Dr. Stacy's care at No. 4 Australian General Hospital, Randwick, his upper arm was in comparatively good condition, but the forearm and hand were much wasted. He was unable to flex his wrist or fingers. He was anaesthetic to wool along the ulnar border of the forearm and over the hand, with the exception of the dorsal aspect of the metacarpus. The hand was shiny and blue. To the faradic current there was no response in the flexor muscles or in the small muscles of the hand. To the galvanic current there

was a response in the *palmaris longus*, but none or a very faint one in the others. The reaction of degeneration was obtained in the median and ulnar nerves.

On May 1, 1919, Dr. Stacy operated and exposed these nerves in the axilla and eventually after long searching in scar tissue, found them divided. He was able to effect an end-to-end apposition of the median nerve at the junction of its two heads and of the ulnar nerve at about the same level. The operation lasted about two hours and was exhausting to all concerned. Several times he was on the point of abandoning the search. But now, two years later, it was somewhat comforting to know that the labour was not all in vain. The patient's forearm was much fuller; pronation was possible to about 75% of its normal extent; he could completely flex his wrist; adduction of it was complete, abduction moderate.

The hand was still considerably wasted and somewhat bluish, but not as much as formerly. The proximal phalanges of the four fingers were slightly hyper-extended. The two distal phalanges were held slightly flexed and extension of these two phalanges was weak.

Abduction and adduction of the fingers were still weak. It was said that the surest test of ulnar paralysis was the patient's inability to superimpose the extended little finger upon the palm of the ring finger. The patient had not yet recovered this power. The thumb movements were recovering. Adduction was good; abduction and rotation were still incomplete. He could approximate the thumb to the distal interphalangeal articulations, but not yet to the pulps of the fingers. Sensation was normal except for a small patch of anaesthesia along the ulnar border of the forearm. His hand grip was still feeble.

Dr. Stacy stated that he showed the patient chiefly as an encouragement to any surgeon who might have to search for nerves amongst a mass of scar tissue. Perseverance was often rewarded. However incomplete the final result might be after suture, it was far preferable to an inanimate, partially useless limb. The case under review was further complicated by the ischaemia resulting from the excision of the axillary aneurysm. Further improvement was expected. In nerve cases, the surgeon should learn to think in terms of years, not months.

Dr. George Bell showed a patient who was suffering from a streptothrix infection of the abdominal wall. The patient, a male of 73 years and a bootmaker by trade, had been admitted under the care of Dr. Macdonald Gill on January 28, 1921. Two weeks prior to admission he had experienced slight pain in the abdomen and had noticed some "hard lumps" in the lower part of his abdominal wall. Examination showed three brawny and indurated masses in the abdominal wall below the level of the umbilicus. The greater part of these masses was situated in the right lower quadrant. Fluctuation was present in their central portions. Under general anaesthesia incisions had been made. The pus contained light yellow granules and in these the streptothrix had been demonstrated. A few weeks later streptothrix could not be found in the pus from the sinuses. The patient's condition had been marked by pyrexia during the month of February—an evening rise of temperature which had reached 38.9° on two occasions. During March the temperature had remained almost normal, except for occasional rises to 37.2° C. The patient had been kept in bed, fomentations had been applied and iodide of potassium administered in increasing doses up to 4.2 grammes three times a day. There had been no discharge from the sinuses during the last two weeks and the surrounding induration had become much less. No history could be obtained of any disturbance of function in the alimentary canal nor did the patient's habits throw any light on the source of the infection. The statement was to be found in Osler and McCrae's "System of Modern Medicine," that 20% of all cases of actinomycosis occurring in man were of the abdominal form. The prognosis was not good. In one series of 107 cases quoted, 77 patients had been treated surgically and of these 22 had recovered and 45 had died.

Dr. Bell then exhibited a ureter containing calculi which had been removed from a patient who had suffered from a sinus in the right lumbar region during the previous three years. He also showed a skiagram which demonstrated the relations of the sinus.

The patient, a female, of 25 years, had been admitted on

April, 29, 1921, and had given the following history. An appendicectomy had been performed in 1912. In 1916 and 1917 she had undergone two operations to fix the right kidney. In 1918 an operation had been performed for an abscess of the right kidney and nine days later the same kidney had been removed. Since then there had been a sinus in the right lumbar region and this had been curetted once in 1920. It was at first thought that the sinus might be caused by some retained foreign body, such as a silk ligature. The sinus was injected with a bismuth paste (bismuth carbonate, 1 part; vaseline, 2 parts) and a skiagram taken by Dr. J. G. Edwards showed that the paste filled the sinus and the ureter as far as the level of the second sacral segment. At this level the ureter was obstructed by two large calculi, which showed up faintly in the skiagram. The sinus, ureter and contained calculi were removed by operation. Great difficulty was experienced in separating the ureter from the adjacent tissues, more particularly in the pelvis, where there was much fibrous induration of the tissues surrounding that portion of the ureter where the two calculi were lodged, viz., immediately above the point at which the ureter was crossed by the uterine artery. The peritoneal cavity was opened once during this stage of the operation and the opening subsequently closed. Convalescence was uneventful.

Dr. Howard Bullock showed two patients.

The first was a single man of 60 years, who had been shown at a meeting of the Branch held on October 11, 1918. A report of the case had appeared in *The Medical Journal of Australia*, November 23, 1918. An operation for the relief of stricture of the urethra had been performed in the Sydney Hospital in November, 1917, when 5 cm. of his urethra had been removed by Dr. Bullock. Prior to that operation, the patient had already undergone several operations for relief of the trouble and when he consulted Dr. Bullock, the stricture would allow the passage of nothing larger than a filiform bougie and dilation of the stricture had had to be performed weekly for four years to prevent the occurrence of retention of urine. Dr. Bullock demonstrated to the members that four years after operation a 13-16 sound could be comfortably passed.

It would be remembered that the patient had suffered from double direct inguinal hernia and operation had been deferred, pending surgical treatment of the stricture. Dr. Bullock had operated for the cure of both herniae three years since and the wounds had stood well the stress of strenuous work.

Dr. Bullock then demonstrated the result of a plastic operation on the face of a woman who had suffered from a squamous carcinoma of the lower lip and outer table of the mandible. The report of this case will be published in a subsequent issue.

Dr. T. Fiaschi described a case of amputation of the hip joint for sarcoma of the femur. The paper describing this case will be published in a subsequent issue.

Dr. T. S. Kirkland showed a curious collection of foreign bodies which had been removed from the oesophagus and bronchi of many patients.

Dr. A. J. Aspinall showed a patient suffering from Dupuytren's contraction of the right hand. The condition was of 15 months' duration and was associated with an ulnar palsy of the left hand of 16 years' standing. The patient was a painter and was 62 years of age. He stated on admission that he had sustained an injury to the right shoulder two years previously and that a skiagram had shown the presence of a new growth of bone in that position. While he was convalescing from pneumonia twelve months later, his right hand became markedly contracted. Treatment with hot air and massage had proved quite ineffective. On his admission to the Sydney Hospital, Dr. Aspinall fitted an abduction splint for the thumb to the patient's wrist and applied an extensor splint to the little fingers and a dorsal splint to the forearm. The patient had since been discharged, considerably relieved. The long-standing ulnar paralysis had been caused by a deep cut in the middle of the forearm on the ulnar side. The condition was typical. No treatment had been given.

Dr. Aspinall's next patient was a man of 46 years, an accountant, who was admitted to hospital on June 25, 1920. While travelling in a motor car he had allowed his right arm to hang outside the car. The arm was struck by a

moving tram with disastrous results. When examined, the patient was found to have a lacerated wound about 7 cm. below the olecranon process, through which the fragments of the broken ulna protruded. There was another laceration over a fracture of the radius in the middle of the forearm. Skiagrams proved the presence of a comminuted fracture of the lower third of the humerus; a fracture of the ulna in its upper third and another in its lower fourth, with displacement of the fragments; a fracture of the radius in the middle of the forearm; and fractures of the second and third metacarpal bones.

Dr. Aspinall stated that he had wired the ulnar fragments and had put up the injured limb on Robert Jones's arm splint with extension. Massage had also been carried out. The result was excellent, the recovery after such extensive trauma being extraordinary.

Finally, Dr. Aspinall described the history of a labourer of 24 years who had sustained a rupture of the left testicle. At 4 p.m. on July 30, 1920, he was attacked and kicked in the perineum. He came to the casualty department of the Sydney Hospital, but refused treatment. At 7 p.m. he returned and it was then noticed that he had a large haematoma of the penis and scrotum, involving the testicle and extending upwards on to the anterior abdominal wall and downwards to the anus. At 9 p.m. Dr. Aspinall operated and opened the scrotum on the left side. Clots were turned out and the testis was found to be completely ruptured. The testis and cord were removed. The sutures were removed after seven days and in three weeks the patient left hospital fit and well.

THE WAR MEMORIAL FUND IN VICTORIA.

We have been notified that the following have contributed to the War Memorial Fund of the Victorian Branch of the British Medical Association: Alfred H. Barrett, H. T. Bourne, C. J. O. Brown, V. C. Brown, H. R. Catford, G. V. Davies, W. J. L. Duncan, W. H. Godby, W. A. Hailes, J. P. Horgan, H. R. Hyatt, J. L. Jona, T. S. M. Kennedy, A. E. Morris, K. Kingsley Norris, Clive Shields, R. R. Stawell, Alex. Steven, F. T. Wheatland, J. C. Wight, W. E. Wilson, "R.M.O.A."

In our issue of August 20, 1921, Dr. F. L. Nance's name was incorrectly printed "Dr F. L. Lance."

POST-GRADUATE COURSE IN MELBOURNE.

The Melbourne Permanent Committee for Post-Graduate Work announce that the next course will commence on November 7, 1921, and terminate on November 19, 1921. Members who propose to take advantage of the facilities provided by the Committee should communicate with Dr. J. W. Dunbar Hooper, Honorary Secretary, Medical Society Hall, East Melbourne. The syllabus will be published early next month.

MEDICAL INSPECTION OF SEAMEN.

In a proclamation in the *Commonwealth of Australia Gazette*, No. 66, of August 25, 1921, the date for the application of Section 123 of the *Navigation Act, 1912-1920*, is fixed for October 1, 1921. The section reads as follows:

(i.) The Minister may appoint any person legally qualified as a medical practitioner in any State to be a medical inspector of seamen and may fix his remuneration.

(ii.) A medical inspector of seamen shall, on application by the owner or master of a ship, or by the superintendent, examine any seaman applying for employment or employed in that ship and give to the superintendent a report under his hand, stating whether the seaman is in a fit state for duty at sea and a copy of the report shall be given to the master or owner.

(iii.) The applicant for the examination shall pay to the superintendent the prescribed fees.

It is stated that the quarantine officers at the chief ports will be appointed to these positions. The owners are required to provide medical attendance, medicines and other necessities for seamen left on shore on account of illness or accident. They must pay seamen who are ashore ill, all

wages for their services. The medical inspectors of seamen will be required to examine seamen left ashore on account of illness or accident. Their services will also be required in connexion with illness and accident of seamen on board a ship in port.

Correspondence.

PHLEBOTOMUS FLIES IN PAPUA.

Sir: The following account of a phlebotomus fly collected in Papua may be of interest in view of the fact that flies of this genus carry "three day fever."

The flies were collected by me some four years ago and given to Dr. Lambert, of the Hookworm Campaign, Brisbane. He very kindly sent them through the International Health Board to the Johns Hopkins School of Hygiene and Public Health. A report from the School by Dr. Root states as follows:

The vial contains two females of a species of phlebotomus. So far as I can learn, no species of this genus have been described from the Australian region. These specimens probably belong to an undescribed species, though since the character of last resort in phlebotomus is the male genitalia, no exact determination can be made from females alone.

The specimens correspond in general with the description of *P. pappatasici*, especially in the wing venation, but differ from that species by their smaller size and by the fact that the first or second abdominal segment bears a tuft of erect hairs like those on the thorax, while the rest of the abdominal hairs are recumbent. I can find no description of a vestiture of this type among the described species of the genus.

If the phlebotomus occurs in Papua, it is quite possible that it occurs in tropical Australia and that some of the "fever" of Northern Australia is really "three day" fever, as I believe is the case in Papua.

"Three day fever" is an acute febrile disease of sudden onset and short duration, accompanied by a leucopenia, with a relative mononuclear leucocytosis, and transmitted from flies (sand flies) of the genus phlebotomus. The incubation period is from three to seven days.

Yours, etc.,

W. M. STRONG, M.D., D.T.M. & H.
Acting Chief Medical Officer, Papua.
Medical Department, Port Moresby,
July 19, 1921.

IS ETHYL CHLORIDE SAFE?

Sir: No reply having so far been given to the above question, asked by "Safety First," it will possibly be assumed by many who have followed the recent interesting articles in your columns on anaesthesia, that ethyl chloride is a safe and riskless anaesthetic to handle. I seriously question if this be so. Personally, I have learned to treat what I look upon as a lethal drug with respect and whenever used by me it is with profound circumspection.

My fears have been confirmed on hearing of the following alarming happenings, which have taken place at the Melbourne Hospital during recent months and which are placed on record in the anaesthetic book:

(1) A nurse went in from my suburb for an appendicectomy; as far I know she was a healthy young woman. Imagine one's horror on hearing that she had died under the anaesthetic in the induction period! Ethyl chloride was administered, followed by open ether; but how much of the latter was used I know not.

(2) A similar case is also recorded, where again ethyl chloride was used, followed by about an ounce of ether, administered by the open method, and the death of the patient.

Presumably death in these two cases was due to ethyl chloride, for the amount of ether would have been insufficient to cause a fatal result.

(3) More ghastly still. Prior to the expected use of ether, for the purpose of induction, ethyl chloride was being administered in the anaesthetic room and in a few seconds the patient was dead!

I have attempted to obtain further particulars, but have

not been successful. I understand that in all three cases competent house surgeons were administering the anaesthetic. It is far from my purpose or desire to criticize any individual, but, in view of such tragedies, it seems fair to sound a warning and, further, to challenge the custom, which appears to be spreading, that the correct method of inducing anaesthesia is by ethyl chloride.

The reply may be forthcoming that ethyl chloride has been used by certain men or in certain hospitals so many thousands of times without a fatality. That may be true, but may not the same be said of chloroform? That answer, therefore, is insufficient.

May I be bold enough to inquire if any other cases of death from the use of ethyl chloride have occurred in Australia and urge any practitioner who knows of such to supply the information?

Yours, etc.,

J. J. KITCHEN,
Assistant Anaesthetist, Melbourne Hospital.
189 Cotham Road, East Kew,
Melbourne, August 2, 1921.

TREATMENT OF CARBUNCLE.

Sir: I do not know whether the following treatment is original or not, but it is original as far as I am concerned.¹ For a long time I noticed the debilitating effects of scraping carbuncles and also the after-pain after each scraping, hence I endeavoured to improve on the treatment by saving the patient's strength and also saving him pain. My conception of a carbuncle is that it is a death of certain parts of the tissues where it happens to be situated. Hence, as the dead parts are insensitive to pain, they can painlessly be eradicated without discomfort. And, moreover, the patient is not necessarily confined to his bed—a very important factor in old people and to not only the old ones.

The treatment consists in a preliminary crucial incision, but not deep enough for the patient to feel the incision. I make the incision through the dead tissues only. Then I dress the parts every four hours with gauze wrung out of glycerine and a piece of protective over the dressing.

Glycerine is antiseptic and hygroscopic to the tissues and also causes an outpouring of lymph from the open tissues, which, to me, seems ideal in the treatment of sloughing surfaces.

Then each day, as much sloughing material is cut away, but only the dead insensitive tissue is cut away, always stopping short of cutting through any sensitive parts. In this way the carbuncle rapidly clears up and the patient is saved all pain in the treatment of this condition. I found this method of treatment of carbuncles to be easy, free from pain to the patient and healing to be rapid.

I also wash the parts at each dressing with 1-6 peroxide of hydrogen in water.

True, I have only treated six cases as above, but I am quite satisfied that it is the easiest treatment and the best and, above all, there is no discomfort to the patient after the preliminary crucial incision.

To me it seems impossible to eradicate the whole of the dead tissues by scraping, as the limits of the carbuncle are not apparent at the beginning and, moreover, by scraping you must infringe on some parts which are healthy and consequently nerve endings are exposed, and hence the pain. Also, most of these cases are not good subjects for anaesthetics. I also find that there is no necessity for any grafting, as, while the sloughs are daily removed as far as possible without pain, there is healing going on at the deeper parts. The cosmetic results in all the above cases were perfect, only a linear scar remaining even in the worst cases.

Apart from the surgical aspects of these cases, the most important thing is the utter absence of discomfort to the patient throughout the whole time. Also, mixed infection does not occur with the glycerine dressing and pus formation is of no consequence.

Yours, etc.,
A. J. J. TRIADO, M.B., Ch.B. (Melb.).

(Undated.)

22 Collins Street, Melbourne.

¹ A similar method of treatment was introduced some time ago by Dr. Allen B. Kayenel, of Chicago, United States of America. It is said to yield excellent results.

Books Received.

- THE SPLEEN AND SOME OF ITS DISEASES:** Being the Bradshaw Lecture, with 13 full-page diagrams, by Sir Berkeley Moynihan; 1921. Bristol: John Wright & Sons, Ltd.; Royal Svo., pp. 129. Price, 21s. net.
- AIDS OF OPERATIVE SURGERY:** by H. C. Orrin, O.B.E., F.R.C.S., Edin.; 1921. London: Baillière, Tindall & Cox; Folioscap 8vo., pp. 236. Price, 6s. net.
- HUMAN EMBRYOLOGY AND MORPHOLOGY:** by Arthur Keith, M.D., F.R.S., F.R.C.S.; Fourth Edition, revised and enlarged, with nearly 500 illustrations; 1921. London: Edward Arnold; Royal Svo., pp. 491. Price, 30s. net.
- MEDICAL CONDUCT AND PRACTICE:** A Guide to the Ethics of Medicine, by W. C. Atchison Robertson, M.D., F.R.C.P.E., F.R.S.E., etc.; 1921. London: A. & C. Black, Ltd.; Crown 8vo., pp. 168. Price, 6s. net.
- DISEASES OF CHILDREN:** Designed for the Use of Students and Practitioners of Medicine, by Herman B. Sheffield, M.D.; 1921. St. Louis: C. V. Mosby Company; Royal Svo., pp. 798. Price, \$9.00.
- SURGERY: ITS PRINCIPLES AND PRACTICE:** by Various Authors, Edited by William Williams Keen, M.D., LL.D., Volume VII.; 1921. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little; Royal Svo., pp. 855, with 359 illustrations, 17 in colour. Price, 75s. net.
- THE ENDOCRINES:** by Samuel Willis Bandler, A.B., M.D., F.A.C.S.; 1921. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little; Royal Svo., pp. 480. Price, 42s. net.
- PRACTICAL PREVENTIVE MEDICINE:** by Mark F. Boyd, M.D., M.S., L.P.H.; 1920. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little; Royal Svo., pp. 352, with 133 illustrations. Price, 24s. net.
- DIAGNOSTIC AND THERAPEUTIC TECHNIC:** Third Edition, entirely reset, by Albert S. Morrow, A.B., M.D., F.A.C.S.; 1921. Philadelphia and London: W. B. Saunders Company; Melbourne: James Little; Royal Svo., pp. 894, with 892 illustrations, mostly original. Price, 48s.
- ENCYCLOPÆDIA MEDICA:** Second Edition, under the General Editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P.E.; Volume VII.: Intestines to Labour; 1921. Edinburgh and London: W. Green & Son, Ltd.; Sydney: Butterworth & Company (Australia), Ltd.; Royal Svo., pp. 611. Price, £1.
- SYDNEY HOSPITAL PHARMACOPEIA AND REFERENCE HANDBOOK:** Eighth Edition, 1921. Sydney: Angus & Robertson, Ltd.; Pocket size; pp. 88. Price, 3s. 6d.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxii.

Royal North Shore Hospital of Sydney: Honorary Assistant Dermatologist.

Newcastle Hospital, New South Wales: Resident Pathologist.

Newnes, New South Wales: Medical Practitioner.

Royal Hospital for Women, Sydney: Junior Resident Medical Officer.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C..

Branch.	APPOINTMENTS.
NEW SOUTH WALES.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.
(Hon. Sec., 30-34 Elizabeth Street, Sydney.)	

Branch.	APPOINTMENTS.
VICTORIA.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Manchester Unity Independent Order of Oddfellows. Mutual National Provident Club. National Provident Association.
QUEENSLAND.	Australian Natives' Association. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIA.	Contract Practice Appointments at Remmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND: WELLINGTON DIVISION.	Friendly Society Lodges, Wellington New Zealand.
(Hon. Sec., Wellington.)	

Diary for the Month.

- Sept. 7.—Vic. Branch, B.M.A.
 Sept. 8.—N.S.W. Branch, B.M.A.: Last day for nomination of two candidates for election to Federal Committee.
 Sept. 9.—N.S.W. Branch, B.M.A., Clinical.
 Sept. 9.—S. Aust. Branch, B.M.A., Council.
 Sept. 9.—Q. Branch, B.M.A., Council.
 Sept. 13.—Tas. Branch, B.M.A.
 Sept. 13.—N.S.W. Branch, B.M.A.: Ethics Committee.
 Sept. 14.—Melb. Paediatric Society (Vic.).
 Sept. 15.—Vic. Branch, B.M.A., Council.
 Sept. 16.—Central Southern Med. Assoc. (N.S.W.).
 Sept. 20.—N.S.W. Branch, B.M.A.: Executive and Finance Committee.
 Sept. 21.—W. Aust. Branch, B.M.A..
 Sept. 22.—Clinical Meeting at the Hospital for Sick Children, Brisbane.
 Sept. 23.—Q. Branch, B.M.A., Council.
 Sept. 27.—N.S.W. Branch, B.M.A.: Medical Politics Committee: Organization and Science Committee.
 Sept. 28.—Vic. Branch, B.M.A.: Council.
 Sept. 29.—S. Aust. Branch, B.M.A..
 Sept. 30.—N.S.W. Branch, B.M.A.: Election of two members to Federal Committee.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.
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